APR L

Farm Chemicals

Normal Superphosphate And The Cone Mixer . 10

Gametocide 15

The Alfalfa Weevil In The Eastern U.S. . 16

Report and Forecast: Spraying on Trial . . 21

Continuous Ammoniator: A Case History . . . 22

Pesticide Labeling . . . 27

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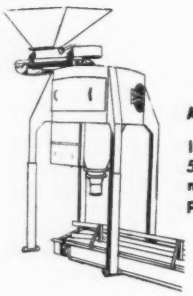

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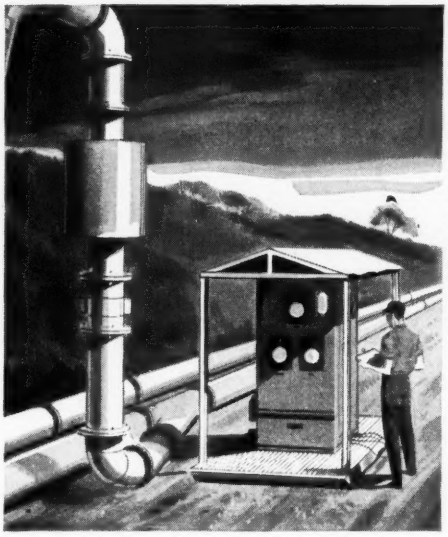

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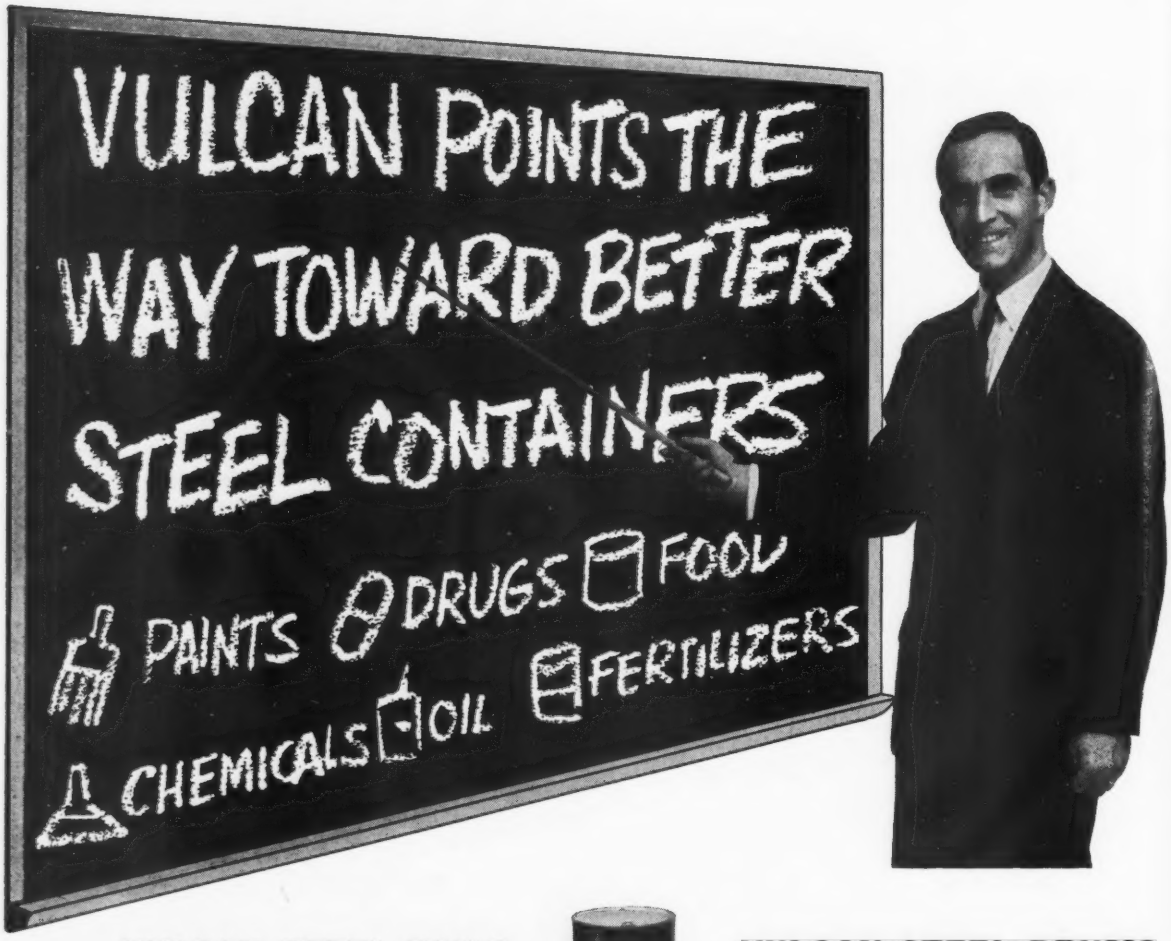

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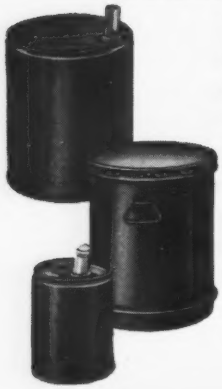

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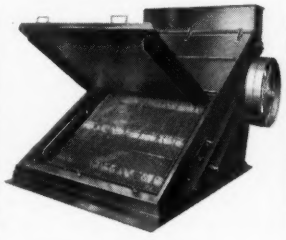

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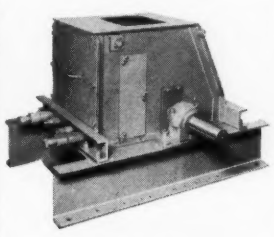

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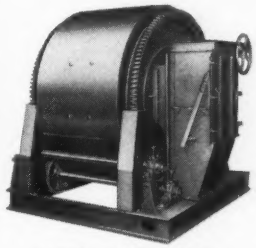

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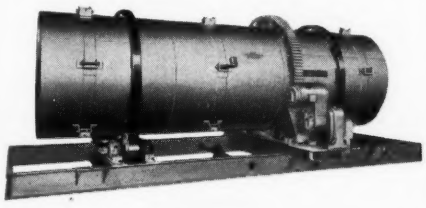

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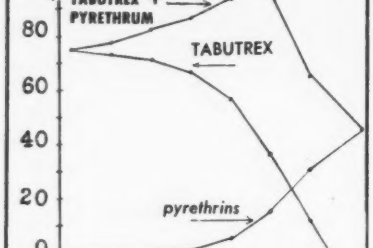

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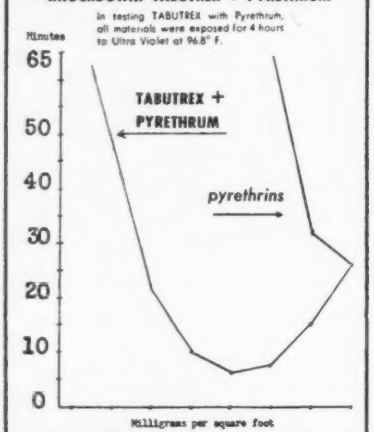

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Farm Chemicals

Vol. 121 No. 4 April 1958

PIONEER JOURNAL OF THE INDUSTRY

FEATURES

The Cone-Type Mixer and Normal Superphosphate 10
Gametocide 15
The Alfalfa Weevil in the Eastern United States 16
Spraying on Trial 21
Continuous Ammoniation Boosts Production 22
Pesticide Labeling 27
New Mineralogical Laboratory 50

INDUSTRY NEWS

Business & Management 30
Calendar 46
People 34
Associations & Meetings 45
Government 47

DEPARTMENTS

Viewing Washington On Agriculture 7
Reader Service 39
Equipment & Supplies 48
Chemicals 52
Production 53
Patent Reviews 54
Dr. Melvin Nord
Pest Reports 56
Fertilizer Materials Market 57
Buyers' Guide 59

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IN THIS ISSUE

▶ The TVA-developed cone type mixer is growing in popularity for normal superphosphate manufacture. Allen S. Jackson, who says that low initial machinery cost and maintenance costs are the "top advantages" of the cone, has written for us about the problems and plant operations where it is installed. We think you'll agree with the fertilizer experts who have had an advance opportunity to read his article, and who tell us it's good . . . **page 10.**

▶ In some stories of research and product development, the unexpected has a leading role when scientists working on one problem have come up with something that could solve another. This experience has been called serendipity. Completely by accident, men carrying out one project or experiment have made fortunate discoveries that later became the key to success in other men's searchings. The history of a chemical that may have marked effect on crop production and the farm chemicals market is such a story. See **gametocide, page 15.**

▶ Long a pest in the west, that evil weevil now feasts like a beast in the east. Alfalfa Weevil . . . **page 16.**

▶ The outcome of the "DDT Trial" may affect—to a degree now unforeseen—future government spraying programs. The fate of the Gypsy Moth may also lie in the balance, for total eradication is the only way to stop its spread. The report of this landmark case and exclusive forecast by John Harms is on **page 21.**

COVER PICTURE

We wonder if this farmer and all the others who are handling and applying fertilizer this spring know what a bargain it is while they listen to talk of the "cost-price squeeze." Modern techniques in production and handling and the acceptance by the farmer of higher analysis fertilizers have enabled the manufacturer to supply the farmer with **fertilizer that is relatively inexpensive in comparison with the other materials he must buy.** The index numbers (based on data for 1910–1914 as 100) of the prices paid by farmers for fertilizers were 101 and 155 in the calendar years 1939 and 1954, respectively. Corresponding numbers for feed were 93 and 226; for farm machinery, 155 and 313; and for seed, 92 and 226.

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VIEWING WASHINGTON

with Farm Chemicals Washington Bureau

on agriculture

Crop production this year will come from the smallest total acreage planted in more than 40 years, according to the Agriculture Department's 1958 Planting Intentions Survey reported in mid-March. Still, officials believe total production will approach the record of last season—on the basis of good soil moisture conditions generally, pointing to prospects of record or near-record yields.

A total of 333 million acres are expected to be planted to all crops. That's less than 1 million less than in 1957. The estimate of total acreage is a projection of the USDA's survey of the 16 big-acreage crops, which shows that the major crops will cover about 271 million acres—about 2 per cent less than last year.

Acreage reductions from last year, in millions of acres, are expected to be: oats, 3.4; all sorghums, 3.4; all hay, 1.2; flaxseed, 1.0; and barley, 0.5. Small reductions are likely for tobacco, peanuts, dry peas and sugar beets.

Acreage increases over last year, in millions of acres: soybeans, 2.2; corn, 1.2; spring wheat, 0.2. Small increases for rice, potatoes, dry edible beans and sweet potatoes.

Wheat marketing quotas will continue in effect for 1959—if farmers approve them in a referendum June 20. The USDA has proclaimed quotas for the 5th year running based on the legal minimum of 55 million acres, same as for this year. If there were no legal minimum for wheat allotments, USDA says plantings would have had to be reduced to about 21 million acres because of the surplus supply.

Little doubt that farmers will vote for quotas again. During the past 4 years, they've accepted these stringent controls with votes well in excess of the necessary two-thirds. With the current surplus, most farmers are expected to go along again for price-protection.

The marketing quota is that amount of wheat farmers can produce on the allotment. If they plant more than their allotment, they are docked a cash penalty—but they can freely sell or put under price support all wheat produced from legal acreage.

One of the hottest questions in Washington nowadays is: Did a depressed agriculture touch off the current National business recession? There are various shades of opinion on this, but they all boil down to the belief that a depressed agriculture was at least a contributing factor.

An economist who says positively that depressions start on the farm is Carl H. Wilkin of the Raw Materials Council. He has told various congressional committees that the U.S.

VIEWING WASHINGTON

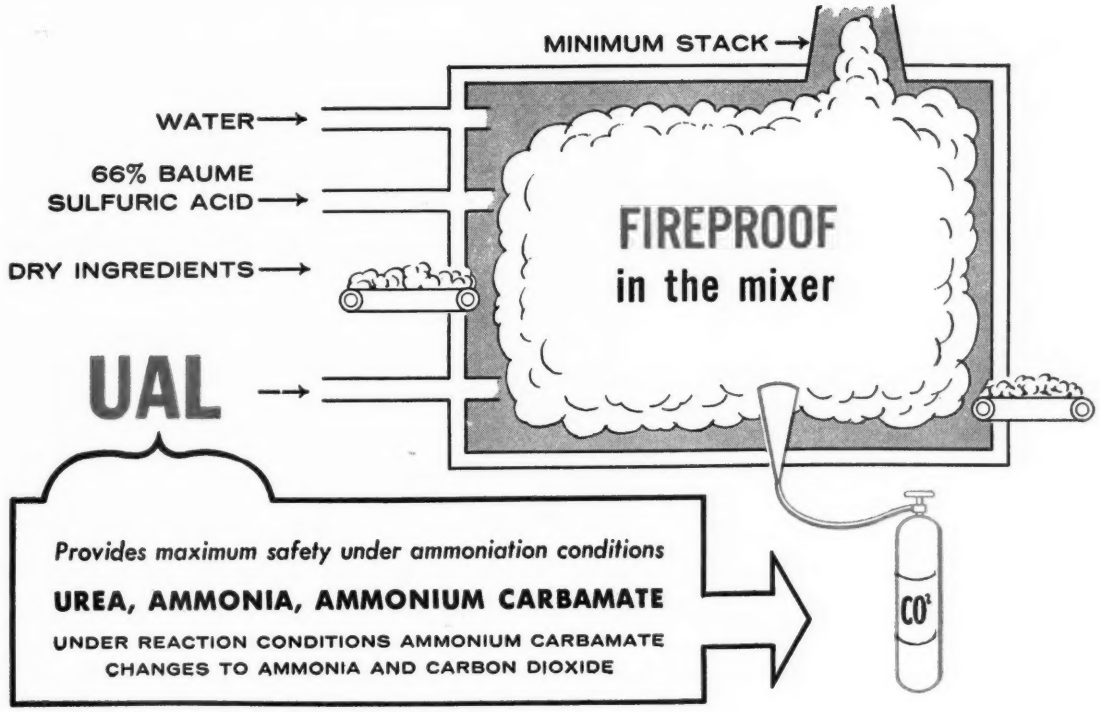
agriculture continued

is losing about a $50-billion-a-year income because farmers are "underpaid." He implies that this amount of spending would have provided jobs for people now out of work.
Wilkin says that the U.S. cannot "underpay producers of raw materials without suffering a direct economic loss." He predicted: "If we try to operate the U.S. with 75 per cent of parity for farm products and other raw materials, the U.S. will lead capitalism into an economic collapse throughout the world."

"The relationship of prices to national stability and growth" will be the subject of hearings before the Congressional Joint Economic Committee, beginning May 12. Chairman Wright Patman said the major goal of the hearings is an objective and authoritative exploration of general economic processes which involve prices, price relationships, costs, and price policies--with the hope that guide-lines may be developed within which public and private policies can contribute to fuller employment.

Administration foot-dragging on tax reduction is basically due to the fear that too-hasty action on cutting taxes may over-stimulate the economy--bring on renewed inflation considered by government economists to be a bigger danger than the current recession. The stall on tax cuts fits in with the Administration's belief that the worst of the down-trend is about over.
If the pickup doesn't materialize in the next month or so, industry as well as individuals can look for some relief. The U. S. Chamber of Commerce is advising Congress to make any tax cuts provide stimulus for both consumption and investment. Its program would provide: A reduction in the corporate income tax rate from 52 per cent to 50 per cent the first year and further cuts to 40 per cent in future years; shorter, "more realistic" tax write-offs on depreciable assets to encourage investment in new plants and equipment. Also, a gradual reduction from 20 per cent to 15 per cent in the tax rate on lowest individual income taxes; a 60 per cent limit on highest bracket rates, then down to 40 per cent; and a 1 per cent point cut in middle-bracket rates.

Superphosphate and other phosphatic fertilizer production in January amounted to 220,881 short tons (100 per cent A.P.A.) compared with December 1957 output of 212,708 tons, according to the Bureau of the Census. Shipments during the month totaled 153,573 tons, or an increase of 10 per cent from the volume shipped during the previous month.
Stocks of superphosphate and other phosphatic fertilizers held by producing plants on January 31, totaled 411,219 tons, up 2 per cent from the previous month, the Bureau reports.



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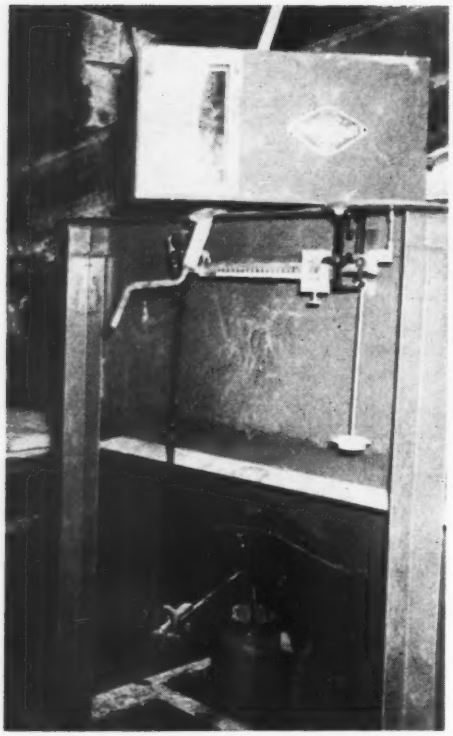
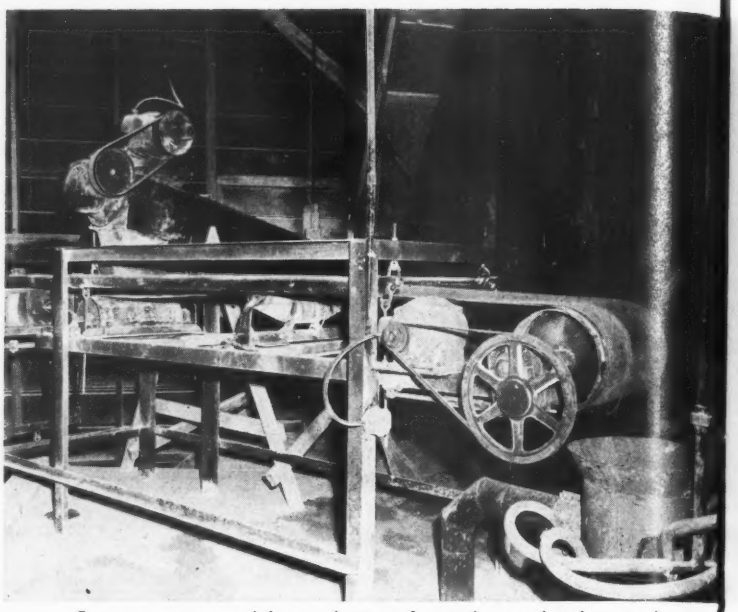


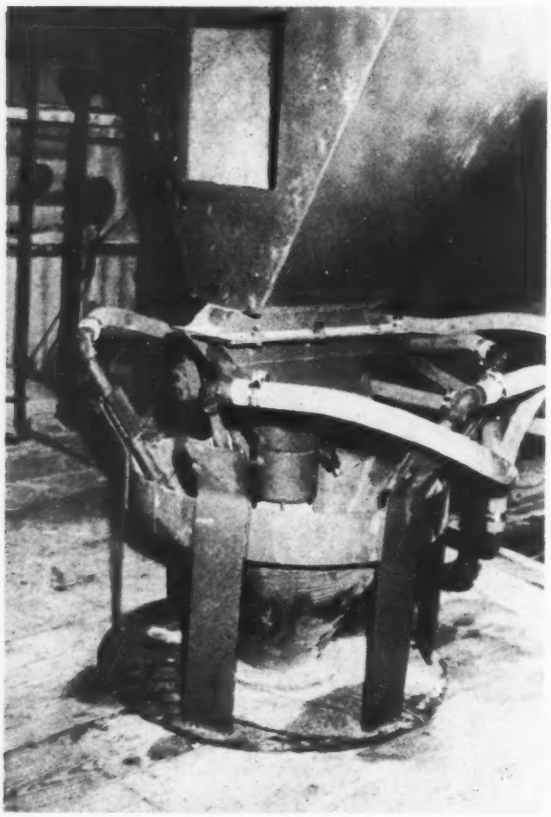
Above: Scale indicator and manual control handle.



First cone mixer used for production of normal superphosphate in the United States, at the Bunkie Phosphate Co., Bunkie, Louisiana.

The CONE MIXER a

Below: Late replaceable lining cone showing discharge end of enclosed self-cleaning weighbelt.



BY ALLEN S. JACKSON
Fertilizer Equipment Sales Corp.

TRIPLE SUPERPHOSPHATE has been made in this country with cone type mixers for quite some time. It was not until 1953, we believe, that normal super was made commercially in this manner. Since that time about 40 cone mixers have been installed in the industry for the manufacture of normal and enriched super.

In discussing this method of making super with men in the industry we find that along with fact there is much fiction associated with the cone. First the cone is simply a mixing vessel. Its purpose is to get intimate contact between the acid and the rock. Retention time in the cone in higher tonnage units is often significantly less than two seconds. Practically all of the reaction between the acid and the rock takes place in the den below the cone. This introduces features both good and bad that we will discuss later.

The mixing ability of the cone is closely related to the size of the cone and the rate at which it is operated. Originally the cone mixer with its short straight spout could get an adequate mix from the rate that would flood the cone to only about 5 or 10 per cent less than flooding rate. That is, a cone that would flood at 40 tons an hour would begin to show quantities of unacidulated rock if the mixing rate were to be reduced below about 35 tons per hour.

Modern cones, however, have considerably expanded the range of mixing. Many will operate as low as 50 per cent of flooding capacity without noticeable unacidulated rock. This is particularly important when cones are installed on continuous dens and mixing rates must be changed for various reasons.

Den Capacity

Cones have been installed with a minimum of trouble on the conventional box den and its counterpart, the very fine Sturtevant den. There is very little change in tonnage capacity of a box type den when a cone replaced a pan type mixer. The cone-made super, with the greater part of the reaction taking place in the den, tends to entrap the gasses and rise to a slightly higher but lighter mass than pan mixer-made super. On the other hand, the extremely fluid nature of the partially reacted slurry tends to fill the den nearly level and make full use of the space. These two effects about cancel each other with reference to actual den capacity.

Continuous dens present a little different problem. If the cone is placed at the extreme end of the den, the very fluid, partially reacted slurry runs immediately to the den slats. If any opening is present, leakage will occur. We feel that on a continuous den the cone should be placed about mid point of the den, allowing the slurry to run back on its own pile—delaying as much as possible the meeting of the slurry and the den slats. This would allow more of the reaction to take place because of the greater time interval and reduce the fluidity of the mix. The tendency of the den to leak will be substantially reduced. The den bed should be inclined a little, the discharge end being about 2 or 3 feet higher than the feed end to allow easy starting.

and Normal Super

Construction Materials

During the past five years we have experimented with various materials of construction for the cone liner. Ten gage black iron unprotected by any coating, but with proper care in stopping, will often last 30 to 50,000 tons on box or continuous dens. On the other hand, frequent starting or stopping—6 or 7 times a day without care—will often destroy a black iron liner in less than 5,000 tons. Teflon, stainless steels, various plastics, and epoxy resin coatings have been tried and all have their good and bad features. For all round durability lead appears to be the most promising. A lead lined cone might be expected to have a life of over 100,000 tons with only a minimum care on any type of den.

In our industry thickness of metal rather than special metal is often used as a defense against corrosion. Often we do not attempt to cure the problems of the corrosive conditions, but simply live with them. In the cone mixer this method can be extremely costly. For example, a 20 T. per hour cone of the narrow range type could be made with a discharge spout wall of ½" thick metal with the idea that you could tolerate a ¼" removal of the metal by corrosion and still have a usable cone. If a constant rate is maintained the mixing ability of the cone decreases as the discharge port enlarges. Extensive damage could occur to a den wall before corrective steps were taken. The enlargement of the neck of a 20 T. per hour cone by ½" in diameter increases the operating rate to 27 T. per hour. Continued operation at 20 T. per hour with very poor mixing would expose the walls of the den to extreme amounts of free acid.

Fine Particle Size

The minimum handling of the slurry after the acid and rock have been brought together seems to allow the grains of rock dust to keep their own identity. Cone super particle size can be very fine. If the moisture is too low, the super can be very dusty to handle. The fine particle size makes the super very receptive to ammonia; cone-super is top quality for mixing. On the other hand the fine particles can give some trouble when used for direct application in the powdered form. The tendency of cone super to pack in farm distributors is a little greater than super made in a pan mixer or a pug mill.

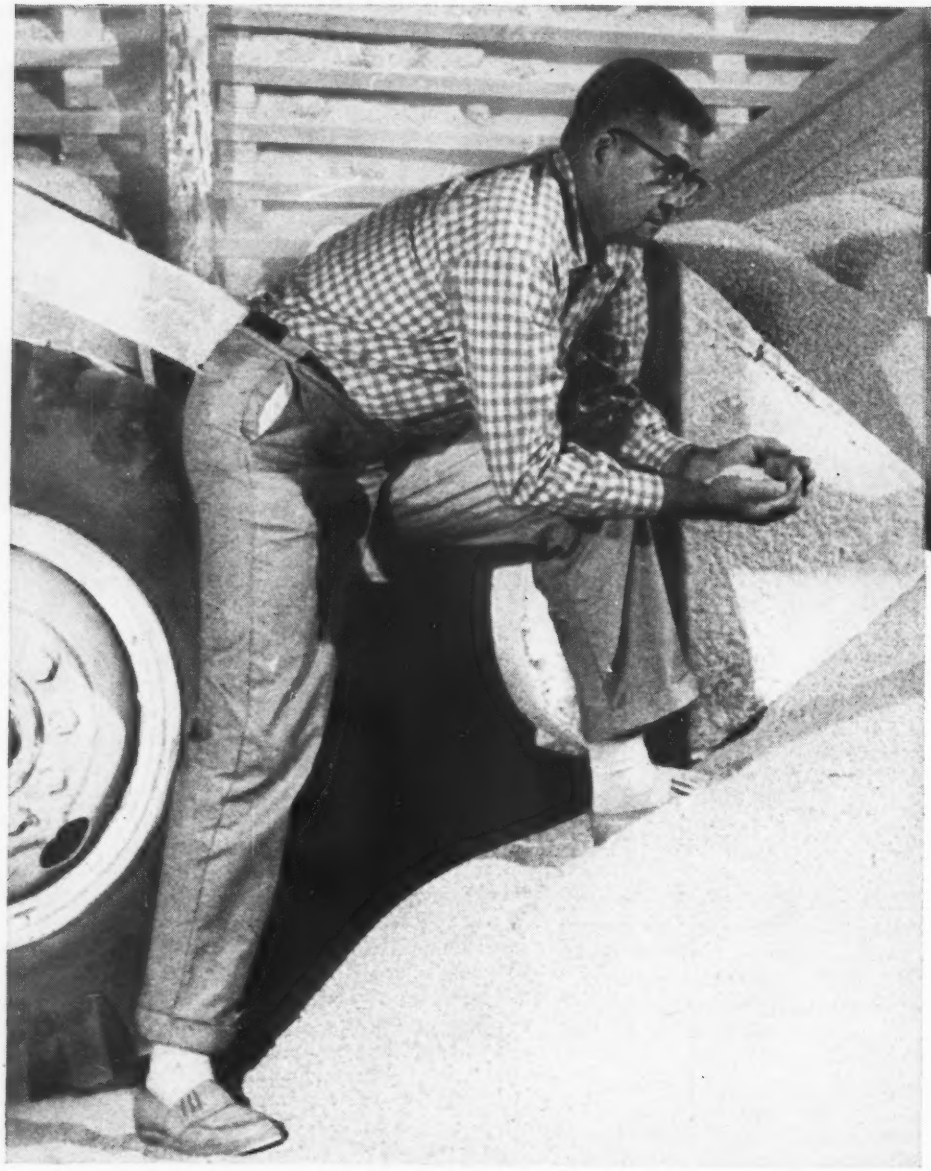
Many super plants are now collecting fluorine as a by-product of their superphosphate manufacture. The cone mixer is sometimes at a slight disadvantage in respect to fluorine liberation from the super. Since most of the reaction occurs in the den, most of the fluorine is liberated in the den. If the den is tall and narrow much of the fluorine has to percolate through an ever increasing depth of material. Some of the fluorine is entrapped within the super. On tall, small surface area type dens, cones show a slight loss in fluorine reclaimed and a slight increase in the fluorine content of the superphosphate. On the continuous or large box dens with large surface areas and shallow depths the additional fluorine retained in the super is negligible.

Installation Design

In the design of a cone mixer installation consideration must be given to the problem of accurately metering acid, water, and phosphate rock dust. Water is seldom a problem. If the water source has a steady pressure a simple manually controlled valve and Flowrater is adequate. If the water pressure varies a constant level tank above the den will eliminate the problem.

Acid metering by conventional Flowrater or by leectronic Flowrater—if some by-products sulfuric or wet process phosphoric acid are used—is usually satisfactory. If the acid is metered from a centrifugal pump in which the cone is the only consumer of the pump's output, manual control of the flow is satisfactory. The acid may be pumped directly to the flow meter and throttled by a valve in series with the

(Continued on page 18)



"Step into the pile anywhere," says Don Peterson, General Manager of the Ashkum Fertilizer Company, "and you'll find every handful of Bumper Crop fertilizer a top sample." Strong demand for the company's granular fertilizers in East Central Illinois and West Central Indiana keeps the plant busy the year round.

Plant Superintendent Chuck Durham watches production closely when plant is "on stream." Good materials here make a good product.

A stop at the granulator shows Clint Serene the mix is right. Full-time local residents provide a highly efficient labor force.

Final check shows uniform pellets coming off the belt. Granulation like this holds recycle to a minimum ... reduces dust problems, too.

"Granulation results prove...

International's Triple Super belongs in our plant"

says General Manager Don Peterson
Ashkum Fertilizer Company, Ashkum, Illinois

Granulation is more than a process at Ashkum Fertilizer. It's the sales-life of the company — for Ashkum sells all mixed goods in granular form.

Granular fertilizers have helped put this small farm community "on the map" during the plant's four years of operation.

The same deliberate care that went into the planning and construction of the modern plant (a William Tyler installation) goes into the selection of basic goods.

"International's Triple Super has earned its place in our plant," says General Manager Don Peterson. "We can bank on its arriving in good physical condition for easy handling. We like the way the triple ammoniates . . . and the uniform pellets that roll off the belts are proof of top granulation."

You can benefit from Ashkum Fertilizer's experience. Rely on International for dependable, helpful service and top-quality product. Write or wire for full information.

Conveyor belt from bagger loads directly into waiting truck as bagging foreman Glenn Heideman checks weight. Conveyor telescopes to load either front or back of truck.

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

PHOSPHATE CHEMICALS DIVISION .... 20 N. WACKER DRIVE, CHICAGO 6, ILL.

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UNION
PACKAGING SPECIALIST
"WHITEY" CAMPBELL

shows packer how to pocket $85,000

$85,000! That's the *annual* dollar savings one user of Multiwall bags will enjoy as a result of a recent Union packaging survey.

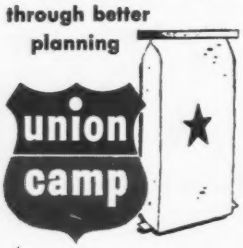
The survey, made by Union Packaging Specialist "Whitey" Campbell, showed that: (1) $57,000 a year could be saved simply by switching the company's 3-ply domestic baler bags to 2-ply's. (2) reinforced sewing construction on 100-lb. packages would save 20# basis weight per bag . . . and additional thousands of dollars in costs depending on the number of bags used.

Union Multiwall Recommendations are based on this 5-Star Packaging Efficiency Plan

- DESIGN
- EQUIPMENT
- CONSTRUCTION
- SPECIFICATION CONTROL
- PLANT SURVEY

These were the major recommendations made and put into effect through Union's 5-Star Packaging Efficiency Plan. Total savings are expected to amount to more than $85,000 when all improvements are completed. How much could this plan save you?

Better Multiwall performance through better planning



UNION'S PACKAGE ENGINEERING DEPARTMENT will study your Multiwall bagging methods and equipment and make appropriate recommendations, regardless of the brand of Multiwalls you are now using.

UNION MULTIWALL BAGS
UNION BAG - CAMP PAPER CORPORATION
233 BROADWAY, NEW YORK 7, N. Y.

A chemical first tested as an herbicide is now a promising hybridizing tool. It acts as a

gametocide

A NEWCOMER to the language of farm chemicals—gametocide—may grow to major commercial importance in the next few years.

Compounded in the Bristol, Pa., laboratory of Rohm and Haas Co., a new chemical—labeled FW-450*, started out its experimental life in the role of an herbicide.

Early in their work with it, Rohm and Haas scientists noticed that when FW-450 was applied to a number of crops, the blossoms dropped off instead of developing normally and setting seed. Then one day Dr. Harold MacRae, a plant physiologist, examined a snap bean flower after it had dropped off, and discovered that there was no pollen in it. He wondered—would FW-450 induce male sterility without causing female sterility?

Dr. C. H. McBurney, assistant director of research for Rohm and Haas, called the chemical to the attention of a U.S. Department of Agriculture cotton physiologist, Dr. Frank M. Eaton, and suggested he try FW-450 on cotton. This, McBurney says, was "in keeping with our long standing program of close cooperation with USDA."

Using an experimental sample of the chemical, Dr. Eaton went ahead with greenhouse experiments at Texas A & M College. He observed that flowers of sprayed cotton plants dropped off shortly after the petals opened. But he also saw that when pollen from unsprayed plants was available for normal fertilization (by insects), flowers stayed on the plant and developed normal bolls containing hybrid seed.

Dr. McBurney tells the next part of the story: "Early in 1956 Dr. Eaton retired from the USDA and joined the Citrus Experiment Station of the University of California at Riverside, where he continued his work on this interesting discovery. He planted four varieties of green-leafed cotton—two American-Egyptian cottons and two Upland varieties—in 40-foot rows between alternating rows of red-leafed cotton. The four green-leafed varieties were sprayed with a solution of FW-450. A good degree of male sterility with subsequent hybridization was shown in three of the varieties, which subsequently were cross-fertilized by bees using pollen provided by the untreated red-leaf strain. Heretofore, hybrid seed had been obtained on a small scale by laborious hand emasculation and hand pollination and only small amounts of experimental hybrid seed could be produced. Additional field tests conducted by Dr. Eaton at Riverside in 1957 appear to substantiate earlier results and the method appears feasible with other varietal parents as well."

Of 41 varieties of cotton tested thus far, FW-450 has induced a significant degree of male sterility in all but four. It is reported that there is some reason to believe that timing of treatment in relation to growth stage was unsatisfactory on two of the four.

In January, Dekalb Agricultural Association, Inc., planted field plots of cotton in Mexico, with the aim of producing hybrid cotton seed, using FW-450 as the chemical hybridizing tool. Their plan is to have first generation hybrid cotton growing from that seed in the Cotton Belt by May. Apparently hybrid corn seed producers, who know that hybrid corn has averaged 20 per cent yield increases, want to see for themselves what possibilities hybrid cotton may have.

Cotton isn't the only plant on which the material is being tested. As a selective gametocide, FW-450 is being tried by government and commercial plant breeders on a variety of flora—from spinach and soybeans to peonies and corn. "It would seem that any crop which is normally selfed prior to anthesis (full bloom) would present a possible useful application of FW-450 as a hybridizing tool," the company has said. "Practically every experiment station has a sample," one executive told FARM CHEMICALS.

Apparently the chemical hasn't completely forgotten what it started out to be, for experiments show that it may be an effective post-emergence herbicide on crab grass.

Will a successful gametocide affect the insecticide industry? That, of course, can't be answered positively. When hybridizing on a large scale is carried out, new generations can have many combinations of desirable and undesirable traits.

For example, cotton has several pests, and varietal resistance to some of them has been observed. Severe damage by leafhoppers was prevalent in South Africa, India, and Australia until varieties highly resistant to them were developed. Resistance to the pink bollworm in certain wild species of cotton has been bred into some cultivated varieties by hybridization and selection. Resistance to several other insect pests of cotton, including thrips and plant lice, has been recorded.

If a hybrid variety is developed that is resistant, or even tolerant, to one or two major pests, and enough seed can be produced to plant significant acreages, a big hole could be cut in the insecticide market.

One thing seems certain: Since one experimental chemical's unforeseen function—as a gametocide—was discovered, and it now appears to be approaching commercial application, researchers are alerted to another use for the new chemicals coming out of their laboratories. If FW-450 doesn't fulfill expectations, there now exists the probability, greater than before, that a commercially effective gametocide will be developed. ▲

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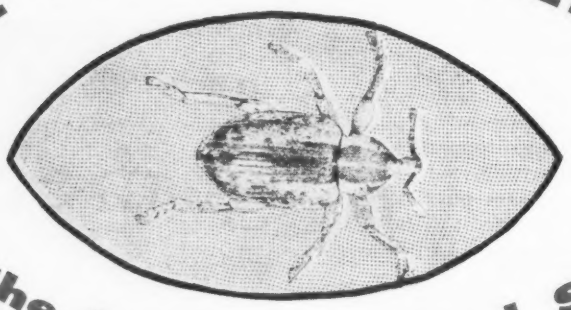
* *Chemical name: sodium 2,3-dichloroisobutyrate*

THE ALFALFA WEEVIL In The Eastern United States



BY GEORGE R. MANGLITZ AND B. A. APP
Entomology Research Division,
Agricultural Research Service, USDA

Alfalfa growers in the eastern United States are becoming familiar with the alfalfa weevil (*Hypera postica*). Although it is a relatively new pest to them, this insect has been in other alfalfa-growing areas for many years. Its native home appears to be in Europe. Its distribution extends into central Asia and Asia Minor and along the northern coast of Africa. But it has never been a serious pest of alfalfa in the Old World, and reports of damage have been localized and relatively infrequent. It is quite possible that natural enemies have held the weevil in check in its native land.

In the spring of 1904 the alfalfa weevil was found on a farm near Salt Lake City, Utah. How it made the journey is not known. It may have arrived on imported alfalfa plants—it was found not far from alfalfa nurseries—or it may have been a hitchhiker with an immigrant or traveler. However it traveled, it found its new home a suitable place to reproduce and spread. By 1916 it caused damage to the alfalfa crop in Utah estimated at $3,000,000. The weevil has continued to spread in the western United States, and now can be found in all the important alfalfa-growing areas from the Pacific Coast into the western parts of Nebraska and the Dakotas.

Discovery in the East

Another big jump by this insect was uncovered when specimens collected by T. L. Bissell, extension entomologist at the University of Maryland, were identified by USDA specialists as the alfalfa weevil. These specimens had been collected from alfalfa on July 14, 1951, in Anne Arundel County and on April 8, 1952, in Baltimore County, Md. The weevil may have come from the western states on baled hay, or it may have come directly from the Old World, passing through the busy port of Baltimore. At any rate, this discovery immediately touched off an intensive state-federal search for the insect in the eastern states. Appreciable damage had occurred in several scattered fields in Maryland, and the weevil was found in 15 counties in that state and in several counties each in Delaware, Virginia, New Jersey and Pennsylvania.

Since 1952 the weevil has become a serious pest of first-crop alfalfa in the Mid-Atlantic states. At

An enemy of alfalfa growers in the West for more than 50 years now prospers in the East

A portion of an alfalfa stem that has been split lengthwise to show location of alfalfa weevil eggs. (much enlarged)

USDA Photo

the close of the 1957 season it could be found from Massachusetts, Connecticut and New York to South Carolina, in 11 states and 248 counties. At first its spread in the East was in a general north-south direction, paralleling the mountains, but during the 1957 season the weevil was found in north-central West Virginia. Since the Rocky Mountains failed to hold this insect in place, it is unlikely that the Appalachian Mountains can do so.

Life Stages of the Alfalfa Weevil

The tiny eggs, which are about 1/50 inch long, are normally found within stems of the alfalfa plant in cavities made by the female weevils. After depositing a cluster of eggs early in the spring, the female generally seals the opening, making detection difficult unless the stem is split. The eggs are yellow when newly laid but turn dark before hatching. The number of eggs per female averages about 400.

The newly hatched legless larva is yellowish or light tan, with a small black head. Shortly after hatching, the larva works its way out of the stem and into the terminal growth of the plant, where it feeds. The larva sheds its skin three times during its development. As it increases in size it leaves the terminal growth and feeds on older leaves. When full grown it is about ⅜ inch long, and green with a distinct white stripe down the center of the back and a fainter white stripe on each side. The head remains black and relatively small, a fact that aids in distinguishing this insect from its close relative, the clover leaf weevil, which may also be found on alfalfa but is rarely damaging.

After the larva has completed its development, which usually takes 3 to 4 weeks, it spins a loose-knit cocoon on the alfalfa foliage or on trash on the ground surface. Within this cocoon it transforms to a pupa and then to an adult. The pupal stage generally lasts 2 weeks.

The adults are about ¼ inch long, and brown, with a darker line down the center of the back which begins at the head but does not quite reach the posterior end. The adults are capable of flight. Their single pair of wings, when not in use, is concealed beneath the elytra, or wing covers, on the back.

In Maryland, the weevil passes the winter in either the egg or the adult stage. The number of eggs that are laid in the late fall varies from year to year. In some seasons there are many, and although the stems in which they are laid are killed by cold weather, the eggs remain viable and hatch in the spring. Overwintering adults seek protection under surface trash or in the upper layer of soil in and near alfalfa fields. With the first warm days of spring they become active, feeding inconspicuously on young stems and laying eggs. Some of the first eggs may be laid in dead stems, but the greater number of them are deposited in growing alfalfa stems. The eggs that pass the winter in the fields are the first to hatch, but spring-laid eggs hatch in about 2 weeks after they have been laid.

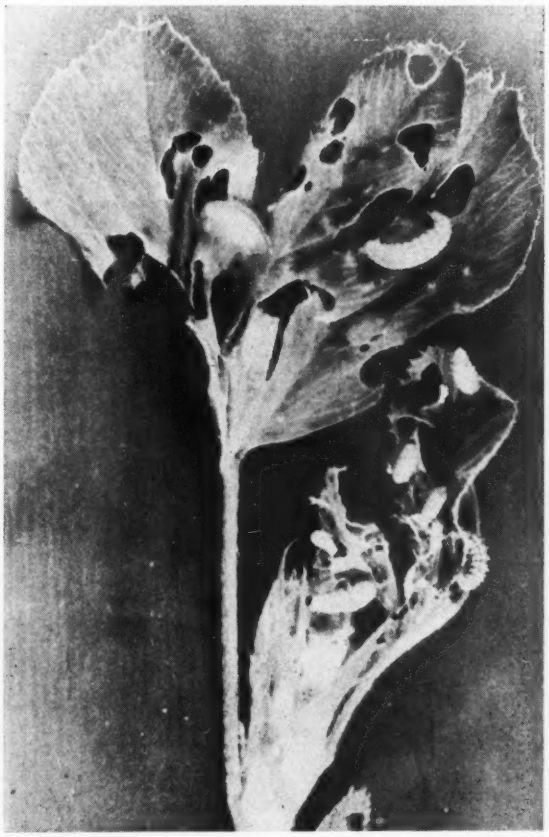
When first hatched the larvae feed inside the yet unopened leaves on the terminal portions of the plant and are thus difficult to detect. It is within the next 5 or 6 weeks that they do the greatest damage. When no controls are applied, the first crop is often a complete loss and, even though weevil activity ceases about the time of first hay cutting, the vigor of the stand may be lowered and the yield during the remainder of the season reduced.

The larvae transform to pupae, and then adults emerge about the time of the first hay cutting. They feed vigorously on the stems and leaves of alfalfa plants and, if alfalfa is not present in sufficient quantity, they may feed on other legumes, such as beans,

General distribution of the alfalfa weevil in the United States. The western infestation dates to 1904 in Utah. The eastern infestation was first discovered in 1951 in Maryland.

Alfalfa weevil larvae feed on alfalfa foliage (enlarged).

USDA Photo



peas and clovers. After feeding for about 2 weeks, most of the adults leave the fields, apparently seeking sheltered places to escape the summer heat. They do not return to the fields until fall and, in the vicinity of Beltsville, have not been observed to lay eggs before late October. When cold weather sets in, the adults hibernate. There may be some weevil activity in alfalfa fields during the summer as some of the overwintered adults may still be alive.

Chemical Control

For control recommendations the grower should consult his local county agent or state agricultural experiment station. The recommendation for the eastern states as given by USDA in "The Alfalfa Weevil, How to Control It," Leaflet 368, revised June 1956, is to apply heptachlor at the rate of 4 ounces per acre when the plants are 10 to 15 inches tall and most of the growing tips show damage. For ground applications this spray can be prepared with 1 pint of an emulsifiable concentrate containing 2 pounds of heptachlor per gallon in 10 gallons of water for each acre to be covered. This treatment should protect the first crop until it is harvested. If a second application is necessary, it should be made no later than 2 seeks before harvest.

If the alfalfa was not treated before the first crop harvest, or if for some other reason large numbers of larvae and newly emerged adults are present at harvest-time, this heptachlor spray should be applied to the alfalfa stubble as soon as the crop is removed from the field. (*Ed. note:* This treatment is also recommended for the 1958 season, as of January 20.)

Control by Natural Enemies

In 1911, shortly after the alfalfa weevil was discovered in Utah, representatives of USDA began a search in Europe for natural enemies of the weevil. After careful studies several parasitic wasps were imported in 1912 and released in Utah. One of these wasps, known as *Bathyplectes curculionis*, has become established and has killed from 80 to 90 per cent of the early larvae that appear in the western states.

This parasite was introduced into Maryland and Delaware in 1953, 1954 and 1955. In Maryland during the 1955 season 75,000 weevil larvae were collected near points where the parasite had been released that season, but only 5 of these larvae had been attacked by the parasite.

Although it is still too early to know whether this wasp ally will become established, the present outlook is not very promising. ▲

CONE MIXER—NORMAL SUPER

(Continued from page 11)

meter, or a circulating system may be used in which a control valve is used to change the inlet pressure to the flow meter. If the second system is used, care must be taken to prevent the pump from bringing air into the system through the pump shaft seal. The pressure on the inlet side of the pump in this system is often less than atmospheric pressure. Air in the line will obviously destroy the calibration of the flow meter. Quick opening valves in the liquid lines are necessary to make fast, accurate starts or fast shut offs.

The rock dust must be metered gravimetrically but the control may be either automatic or manual. If the specific volume of the dust is stabilized prior to entering the feed device, manual control is perfectly satisfactory. Because of the simplicity, we feel it is preferable. Automatic solid feeders will perform very satisfactorily but we feel that their additional maintenance problems are generally unjustified. In operating the cone, starting and stopping can be accomplished in a fraction of a second. No measurable amount of off analysis mixture will occur.

An operator must be by the cone at all times. Should a piece of paper or other obstructions block the opening of the cone a bad spill could occur if the unit were not shut down immediately.

Strong Acid Problems

The only material coming out of the top of the cone in the work area when 78 per cent acid is used will be a small amount of rock dust. No fluorine fumes will be noticed from the cone. If the fume evacuation fan capacity is sufficient to remove the fumes from the den, no fluorine fumes will exist around the den. However, 93 or 98 per cent acid presents a very difficult problem in handling the fumes that evolve from the cone. The heat of dilution will cause considerable quantities of steam, containing fluorine fumes, to boil out of the cones.

Quality control with 93 or 98 per cent acid is often erratic as the water loss in the steam makes the actual reacting strength of the acid variable. Excess reacting acid strength often occurs, with accompanying losses from delayed P_2O_5 conversion. ▲

SUMMARY OF CONE MIXER FEATURES

Analysis—No significant difference from any other method of making superphosphate as long as the same ratio of acid, acid strength and rock is used.

Condition of Super—Probably no real difference exists in the super but there is some tendency to make a finer particle size that ammoniates very well. When used as ungranulated direct application super the fine particle size tends to pack and distribution qualities may be slightly impaired.

Fluorine Removal—Under some den conditions a greater quantity of fluorine is retained in the super.

Initial Acid Strength—Cone mixers are very easy to operate with 78 per cent sulphuric acid, but strong acid—93 or 98 per cent—is difficult to use.

Machinery Cost—This is the top advantage of the cone mixer. Initial machinery costs and all maintenance costs are very low. Operating maintenance costs are often significantly less than a penny a ton. These features have allowed many small mills that could not previously afford superphosphate plants to produce their own super, and substantially lower their phosphate costs.

Now...direct application of malathion on livestock...

...the first phosphate insecticide to receive federal tolerances covering use on cattle, hogs and poultry.

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Now you can get *fast, sure* control of blood sucking, profit cutting pests with malathion, a phosphate insecticide you can apply *directly* to your livestock. Years of country-wide research have proved the effectiveness — and safety to animals — of this new practice. Together with its long-established use in and around animal shelters for flies, direct application of malathion gives you all-around insect control with *one* insecticide. This efficiency is made possible by malathion's unique combination of effectiveness against insects, fast killing action and *low toxicity* to man and animals.

Here cattle are being sprayed with malathion for lice. Ticks and horn flies, when present, are also controlled.

Here is an outline of malathion use recommendations for livestock:

For Cattle

Malathion can be applied by hand or power sprayers directly on cattle to control horn flies, lice and ticks. Malathion also can be used in back rubbing devices to fight lice and horn flies. Malathion should *not* be used on lactating cattle or calves under one month of age.

For Hogs

Malathion sprays can be used directly on hogs, as well as in pens and in litter for control of lice. Apply when needed. One application usually does the job.

For Poultry

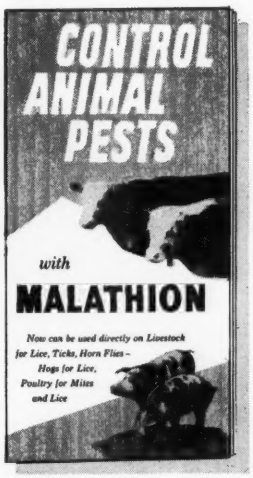
Apply malathion directly on birds to control Northern fowl mites and poultry lice. Use sprays or dusts.

Spray malathion thoroughly on all poultry house surfaces to clean up Northern fowl mites, chicken red mites, poultry lice and flies. For mites and lice, dusts may also be used. For poultry ticks, use sprays.

Or, malathion as a roost paint will control chicken red mites and poultry lice. Apply as needed.

Malathion is not a brand name. It is the active ingredient in branded formulations offered by over 100 well-known manufacturers. American Cyanamid Company manufactures the basic ingredient. For a detailed leaflet describing direct application on livestock, write to American Cyanamid Company, Insecticide Department H&I, New York 20, New York.

Egg production is maintained by keeping birds free of Northern fowl mites and poultry lice ... and shelters free of Northern and chicken red mites, fly and flea. Dust is ideal to control...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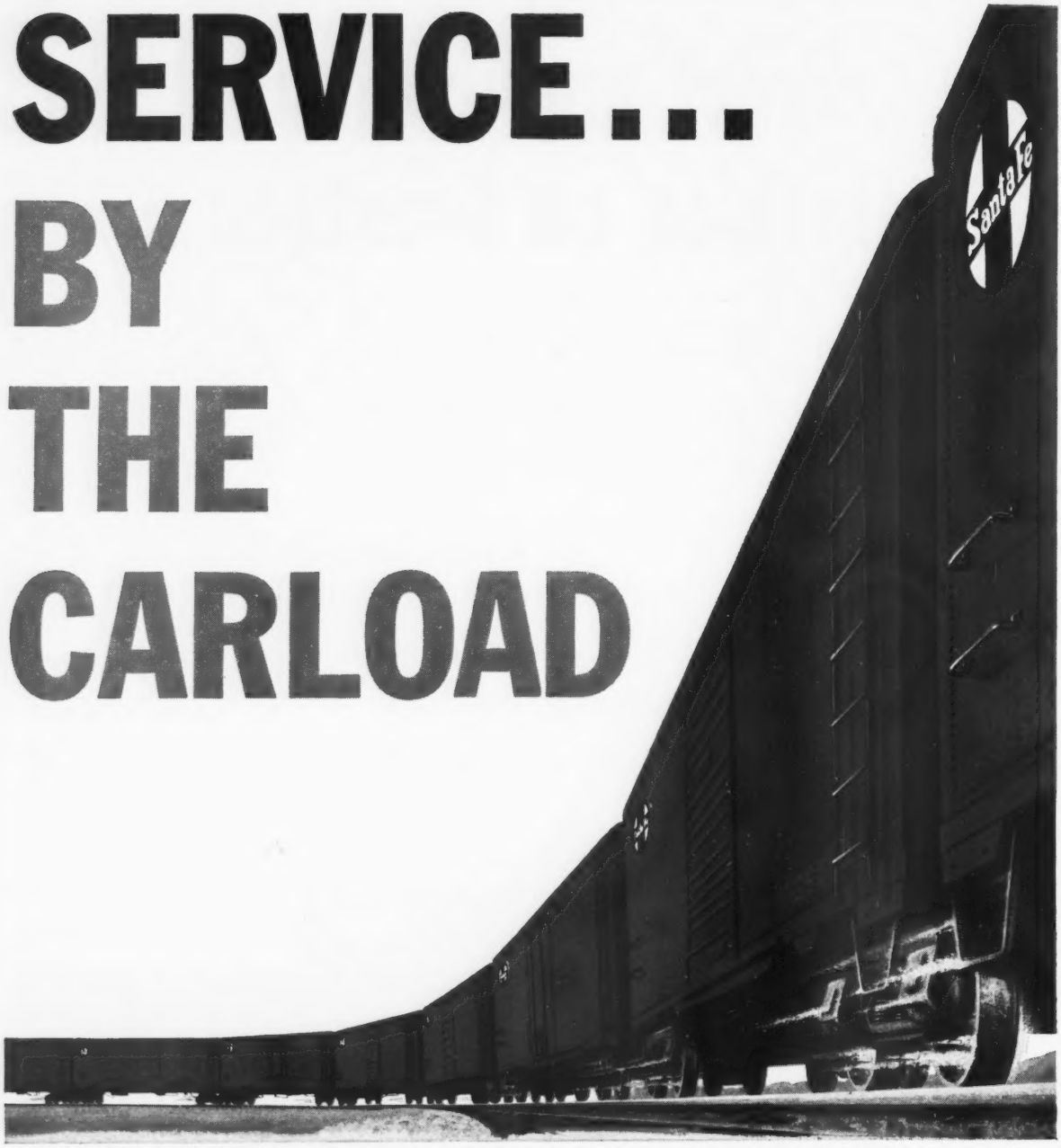

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SPRAYING ON TRIAL

The fate of the gypsy moth in the U. S. and the future of our large scale insect eradication programs may hinge on this decision.

EXCLUSIVE REPORT AND FORECAST

BY JOHN HARMS

ONE of the most far-reaching court cases to affect the pesticide industry in recent times is due to be decided shortly in the U. S. Eastern District Court in Brooklyn, New York.

The impact of the decision in the case of Murphy, Roosevelt, et al vs. Butler and Carey—the "DDT Trial"—will be felt far beyond the immediate issue. The decision rests on the shoulders of one man, Federal Judge Walter Bruchhausen.

Judge Bruchhausen's decision is whether to order a permanent injunction against the spraying of one insecticide, DDT, over the private property of 14 specific landowners in Long Island, New York.

Below the surface, the big issue is whether government agencies can be completely blocked from mass spraying of DDT. Furthermore, the decision in this case will affect government mass spraying of any insecticides to some degree—depending upon the direction of the decision.

The court is expected to rule before the end of April, and it may already have done so by the time you read this. Here are the significant probable effects, depending upon whether the decision goes for or against the permanent injunction sought by the 14 landowners:

If an injunction is not granted: While this decision would not preclude other pesticide litigation in different areas, it could tend to discourage it.

For their part, the federal and state governments engaging in mass spraying will continue to seek ways and means of reducing residues on any crops, as they have been doing right along, according to government officials. The trial may have had the effect of stressing greater caution.

If an injunction is granted: The immediate effect, of course, would be that government agencies could not spray the 14 plaintiff landowners' properties with DDT. In itself, it would affect no other government mass spraying operation.

In the broader view, however, this decision would set a far-reaching precedent. An injunction undoubtedly would encourage new court cases in other areas of the country on not only DDT, but also other pesticides of greater toxicity. Depending upon how successful such cases might be, the eventual effect could be a total ban on mass spraying of DDT—and, in the most extreme situation, bans on mass spraying of *any* insecticides which deposit residues.

While the case has brought out sharply that even experts disagree on the effects of DDT, there's little question that all pesticides received a "black eye" in the layman's view since newspapers generally picked up the more sensational charges involved. Other "trials" would serve further to discredit the use of insecticides on a mass basis.

Next spraying operation vulnerable to attack is the program to eradicate the fire ant on millions of acres in the South. DDT-related dieldrin and heptachlor already are coming under heavy fire from wildlife groups. U. S. Department of Agriculture officials, however, say they have received no complaints from farmers or other people where the spraying program is going on.

Spray Programs to Continue

The federal government, at least, aims to continue its mass spraying programs "for the welfare of the country"—no matter what. If the court rules against the DDT spraying in the current case, if necessary, officials say, they'll appeal the decision right up to the Supreme Court.

If the District Court's decision is adverse, the Agriculture Department—which runs the federal government's part of the cooperative programs—will encourgae the states involved to change their laws or regulations to meet the decision so that mass spraying can proceed—if state law is an issue. If the

(Continued on page 24)

Output rate up— from TEN to TWENTY Tons per hour

By James E. Madigan and Wm. P. Niedermeyer

Production Boosted By

THE initial installation at the Eagle Grove, Iowa, Consumers Coop. Assoc. fertilizer plant, completed during the earlier stages of the movement to granulation, featured a compact set-up when compared with systems employed at that time.

Equipment included drying and cooling drums, raw material screen, crusher, batch-type mixer, and product screen. It was arranged so that building changes would not be required when modifications or additions became advantageous.

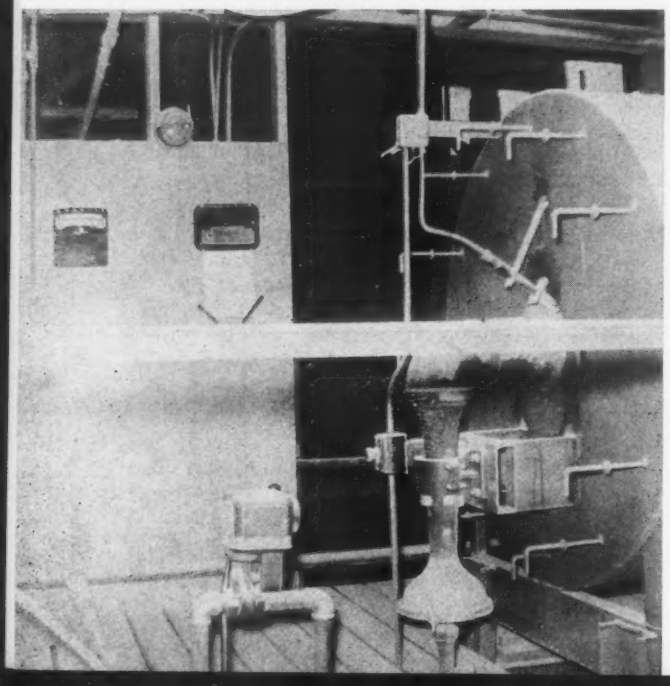
A production rate of 10 TPH was normal. As demand for granular products grew, management sought process changes to increase the rate of production.

Limiting factors were the batch-type mixer and the drying capacity of the drum. The dryer drum—which was the largest size permissable within available building space—originally included a sparger arrangement for ammoniating at the feed end of the drum, since this function could not be accomplished continuously in a batch-type mixer.

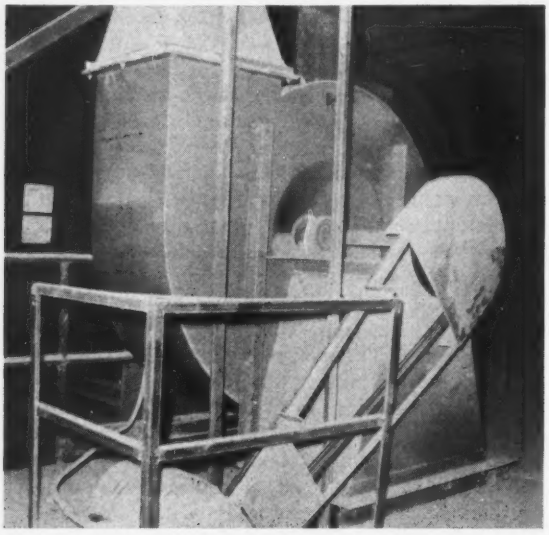
By replacing the mixer with an improved version of the TVA continuous ammoniator, and by continuous gravimetric feeding of all raw materials, ammoniation could be accomplished prior to the drying drum stage.

The Preblender*-Ammoniator-Granulator includes an innovation for pre-mixing materials and continuously discharging this mixture directly into the

* *Patent applied for by Fertilizer Engineering & Equipment Co., Inc.*



ABOVE LEFT: All raw materials are screened prior to entering surge hopper which feeds Omega. High-Low indicators are included. BELOW LEFT: Shown is the combustion chamber with safety controls and automatic temperature control. BELOW: Cooler fan, with suction from cooler, discharges into dust collector cyclone.



Continuous Ammoniation

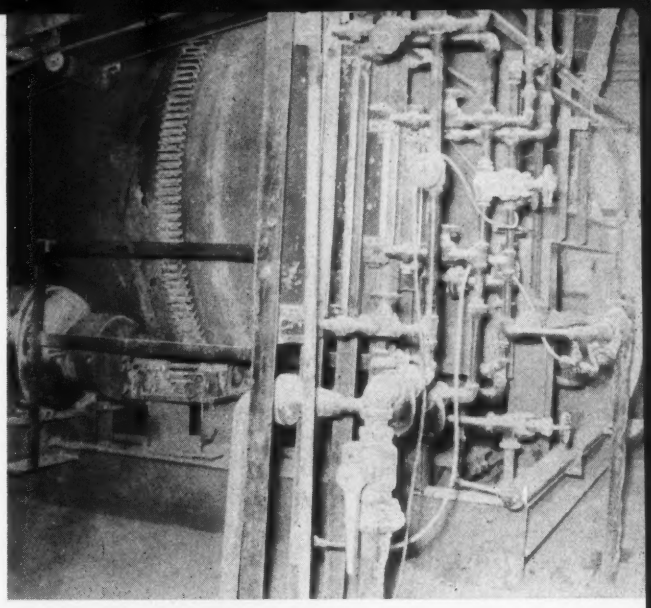
ammoniation section of the drum. Built integral with the ammoniator-granulator drum, this method eliminates any material handling after mixing, and thus precludes any possible segregation.

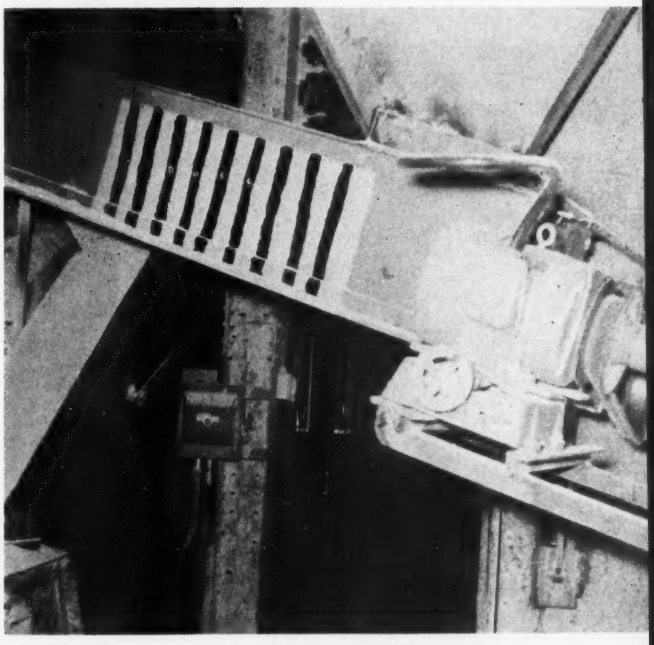
Because ammoniation now occurs ahead of the dryer, the spargers were removed, and a completely new "full-curtain" flighting arrangement was added to the drum. A 5′ x 8′ combustion chamber was also added to the opposite end. These changes resulted in more complete combustion, uniform pre-heating of the air mass in the chamber, effective increase in net drum length available for drying, and more efficient transfer of heat from the air to the granules of fertilizer which are now fully "curtained" within the rotating drum.

Other modifications installed were larger fans to balance the air system requirements, and air-tight breechings with seals to give maximum thermal efficiency.

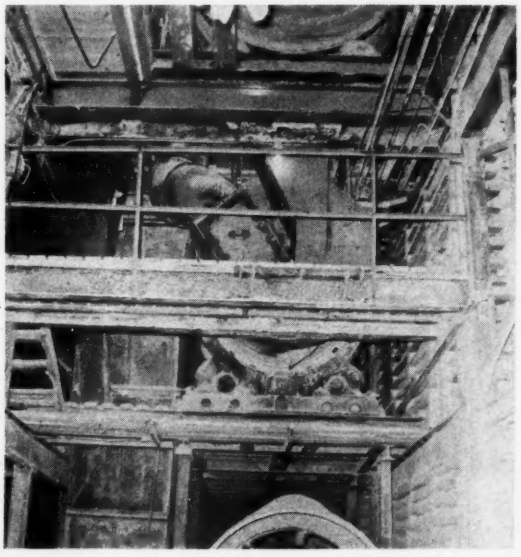
The system was also modified to include a FEECO Chain Mill for breaking oversize product. Additional transfer equipment, gravimetric feeder, flowrators, and a variable speed screw feeder for recycling fines back to the ammoniator were also included in the modernized process.

All plant modification was handled by the Fertilizer Construction Company, Inc., of Green Bay, Wisconsin. The change-over began in late November 1957, and was completed by December 22, 1957.





ABOVE RIGHT: The liquid control station is located in the ammoniator operating area. RIGHT: Variable speed screw returns recycle to ammoniator via belt. Note the safety precaution for low headroom. BELOW RIGHT: Feeco chain mill for breaking oversize product discharges to cooler intake. BELOW: Preblender-Ammoniator discharges into countercurrent dryer (center). The cooler also is countercurrent.



(Continued from page 21)

decision requires changes in federal legislation to permit mass spraying, officials plan to encourage Congress to act.

Explaining the USDA's attitude on the issue, M. R. Clarkson, deputy USDA research administrator in charge of regulatory programs, declared "dangerous insect infestations are our major responsibility, and we are charged with taking all available steps to protect those areas which are not yet infested." He added that, regardless of the court case, the spray program will start again May 1 in Pennsylvania, New Jersey and New York fringe areas.

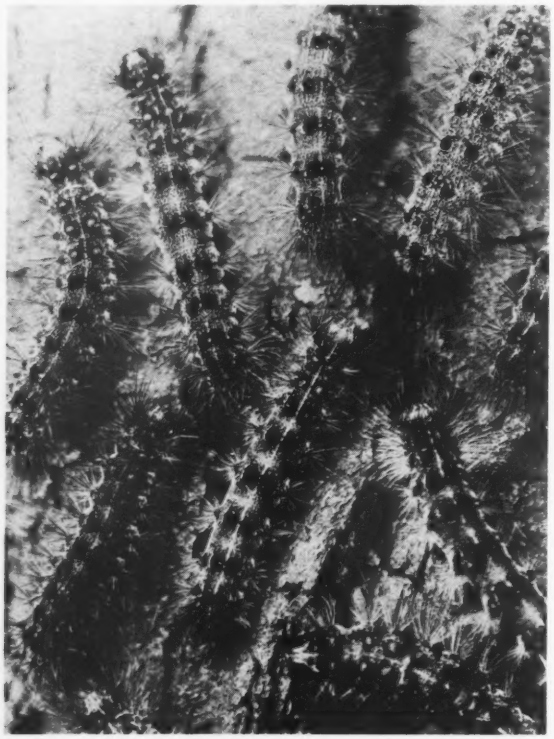
Eradication is Goal of Spraying

Clarkson warned that if government activity is reduced merely to control and not to eradicate the gypsy moth in the Northeast—"we would be powerless to keep it from spreading throughout the country, causing millions upon millions of dollars worth of damage." The gypsy moth rides on any strong wind—thus infesting new areas and making eradication a priority.

Here are highlights of testimony during the three-week trial, upon which Judge Bruchhausen will make his verdict:

According to the plaintiffs, the federal statute allowing spraying deprives them of property and possibly lives without due process of law (Fifth Amendment); is an invasion of privacy (Fourteenth Amendment); and allows defendants to "tortiously and illegally trespass upon the persons and property of the plaintiffs, and cause them irreparable damage."

Leaf-eating caterpillars of the gypsy moth, the life stage to be attacked when aerial spraying resumes May 1 in fringe areas of infestation. *USDA Photo*



In the spring of 1957, the USDA in cooperation with New York State aerially sprayed about 3 million acres against gypsy moth infestations on Long Island, New Jersey, and Pennsylvania with DDT. Rate of spraying was 1 pound of DDT in 1 gallon of solvent (kerosene) per acre. Also slated for spraying was an area in southwestern Connecticut, but that state announced it didn't want federal assistance in exterminating gypsy moth foci.

Dr. Robert Cushman Murphy, curator emeritus of the American Museum of Natural History and a noted ecologist, and Archibald B. Roosevelt headed up the fourteen plaintiffs. Defendants in the case were Lloyd Butler, area supervisor of the Plant and Pest Control Division, USDA, and Daniel Carey, commissioner of agriculture and markets of the state of New York.

As pointed out by USDA attorney, Harold Carter, many of the plaintiffs' witnesses were plain citizens who testified that they had been sprayed, that they had had to throw away their clothes, that they were shunned by people on trains, etc. Carter pointed out that Dr. Hargraves, star witness, was a clinician and not a toxicologist, and that Drs. Knight and Pottenger of California, secondary star witnesses, both admitted to being adherents to the organic gardening movement.

Major Charges and Rebuttals

These are the main charges made by the plaintiffs, and the government rebuttals, in brief:

Charge. Dr. Malcolm Hargraves, Mayo Clinic blood specialist: DDT, its solvents, and other chlorinated hydrocarbons are one cause of leukemia and Hodgkins disease; aplastic anemia and jaundice may also be caused by DDT. (All but jaundice are fatal blood ailments.) *Rebuttal.* Dr. Frank Princi, associate director, Kettering Laboratory, and Cincinnati Medical School: It is not harmful to spray one pound of DDT per acre.

Charge. Dr. Coda Martin, New York geriatrics specialist: DDT's cumulative effect is especially damaging to the liver, nervous system, enzyme system. *Rebuttal.* Dr. Wayland J. Hayes, toxicologist, U. S. Public Health Service: A test in which prisoners were fed 200 times the amount of DDT normally taken in the daily diet showed no adverse effects.

Charge. Dr. Francis Pottenger, California physician: DDT is a cumulative delayed action poison which can cause irreparable injury and death; it can be absorbed by humans from food, air, and touch; humans have 10 times as much DDT stored in their systems as they did 10 years ago. *Rebuttal.* Dr. Hayes: Examinations of employees in DDT-producing plants showed no ill effects from hydrocarbon absorption.

Charge. Boyd Opheim, Montana Fish and Game Commission: DDT sprays led to fish mortality up to 90 per cent in some streams. *Rebuttal.* Frank A. Soraci, New Jersey Department of Agriculture: Fish damage by DDT sprays is insignificant and temporary. ▲

How well does TREBO-PHOS* ammoniate?

First commercial runs with Cyanamid's new Triple Superphosphate indicate:

1. Ammoniation easily achieved up to 4.6% and higher with suitable equipment.

2. Even at rates over 5%, no uncomfortable ammonia fumes were evolved under optimum conditions.

3. The ability of TREBO-PHOS to ammoniate at high rates means manufacturers may choose from a wide range of nitrogen carriers.

4. Early indications are that the physical condition of TREBO-PHOS makes possible *complete* and *uniform* absorption of ammonia. A well conditioned mixed fertilizer which is dry and drillable should be the result.

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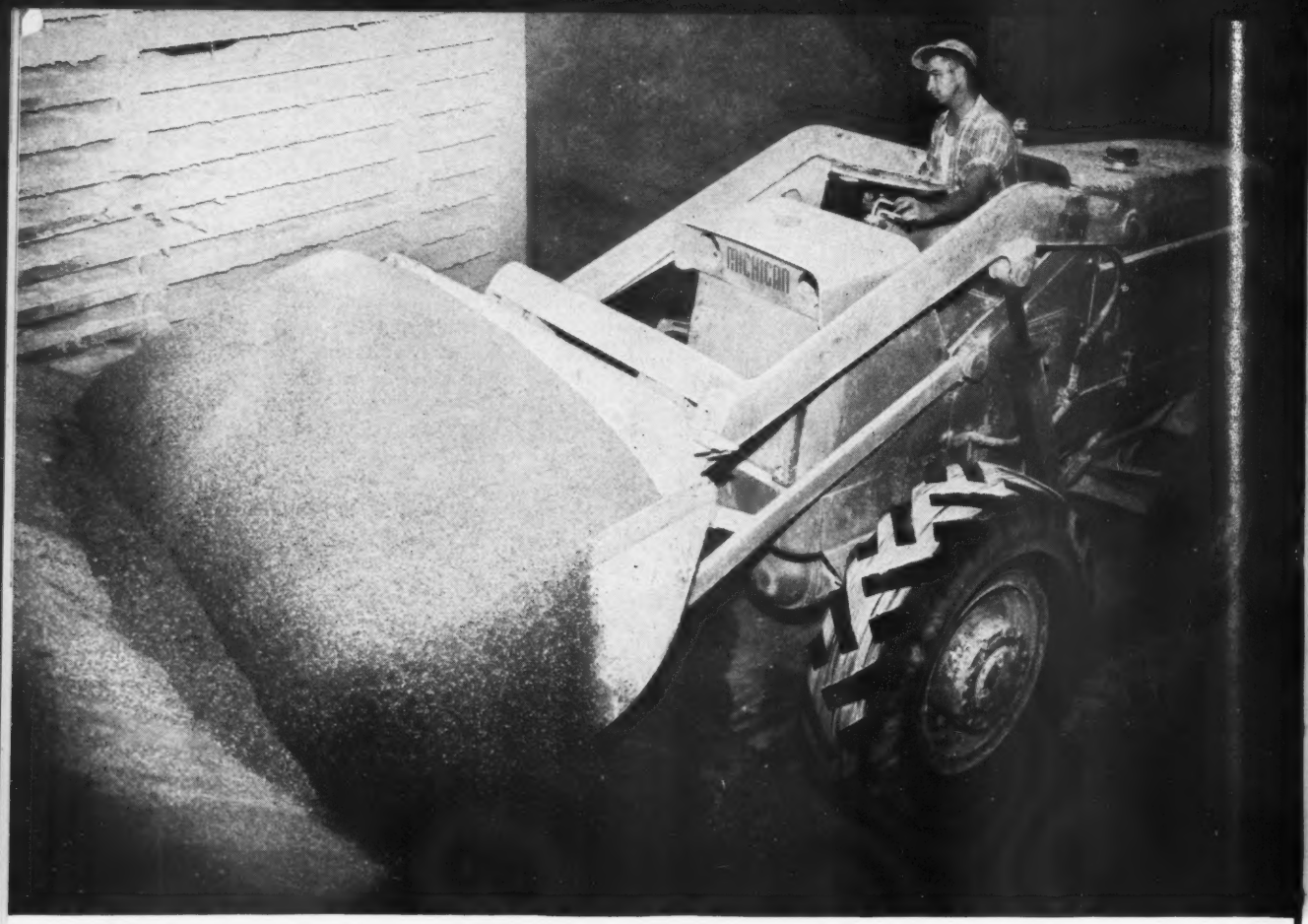

Dust a problem in your material handling?

Here's how Michigan Tractor Shovels help Swift & Company

Swift & Company's plant food division at Madison, Wisconsin has the usual problem encountered in the processing of raw materials such as potash and superphosphate, and in handling the finished plant foods.

Equipment used in these processes is exposed to long hours of continuous maneuvering while handling the bulk materials. Equipment must be durable to withstand the heavy loads, quick stops, and grit of raw material acting on the machine. Swift officials report the one-yard 77 hp Michigan Model 75B shown has given excellent results in meeting these requirements.

Moving potash 110 ft from bin to mixer, Michigan is timed delivering 60 loads (97,200 lbs) per hour. Unit changes direction and speed at flick of power-shift lever. No clutching needed.

Works round-the-clock

"It is dependable," says Madison Assistant Superintendent Harry Peeler. "It worked round-the-clock during our latest two-month rush season. Its only stops were to add fuel, inspect oil, and change operators. We've had no troubles with grit in the power-train . . . and no axle failures."

Ken Kremelling, veteran tractor shovel operator, says, "Michigan's torque converter helps you heap big loads fast. Low bucket-carry helps you keep what you load. Power steer takes you around turns fast. And power shift helps you start back for the next load fast."

See Michigan advantages for yourself

A trial in your plant will show you how these same advantages can pay off for you. Write for details on the size Michigan that interests you—6, 10, 15, 20 or 27 cubic feet; 1, 1½, 1⅝ or 2¼ cubic yards.

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Construction Machinery Division
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CLARK® EQUIPMENT

PESTICIDE LABELING

The Federal Insecticide, Fungicide, and Rodenticide Act requires that the labeling of a pesticide shall include cautions or warnings that, if complied with, are adequate to prevent injury to man, other vertebrate animals, vegetation, and useful invertebrate animals. The Act also requires that the label shall include certain specific statements regarding the composition of the product and directions for use which are necessary, and if complied with, adequate for the protection of the public. Interstate shipment of the pesticides concerned is, of course, essential before these Federal requirements may be brought into effect.

PROBLEMS associated with the labeling of pesticides intended for use on various crops and commodities have become increasingly complex in recent years. A selected number of pesticides, for use on a selected list of crops and commodities, can illustrate the more general problems of labeling pesticides in conformity with the Federal Insecticide, Fungicide, and Rodenticide Act and the Pesticide Chemicals Amendment to the Food, Drug, and Cosmetic Act.

This discussion is restricted to those uses of chlordane, DDT, dieldrin, endrin, heptachlor, malathion, methoxychlor, parathion, and phosdrin that have been cleared on the crops and commodities listed in the table. It should, of course, be understood that other insecticides have also been cleared on these crops.

Clearance indicates that the accepted usage is not likely to result in any contamination of food or animal feed, except within the limits of established tolerances. Details of these clearances are published in the "Summary of Certain Pesticide Chemical Uses," which has been widely distributed to commercial companies manufacturing or distributing pesticides and to cooperating state officials. Amendments to this Summary are issued to keep it up to date with additional clearances.

For the present, USDA is, in many cases, continuing to register a number of pesticidal treatments which have not as yet been fully cleared. However, in all such cases, there is no information available which would lead us to believe that a residue of the pesticide could actually be found on the marketed commodity. Also, in a number of cases, restrictive labeling is accepted as a basis for the registration of a pesticide. An important illustration of this practice is the use of the label warning "Do not feed treated forage to dairy animals or to animals being fattened for slaughter" on the labels of many chlorinated hydrocarbon insecticides designed for use on forage crops.

Some crops and commodities will be discussed in relation to the pesticides named. While discussing residues, we do not overlook the fact that many of these pesticides are quite hazardous and should be used only when the needed precautions given on the label are exercised. Attention is also invited to Interpretation No. 18. Revision No. 1, which includes the warning and precautions for most of the common formulations of pesticides.

Alfalfa, Corn Forage and Peanut Hay

The use of pesticides on alfalfa, as well as on other feed and forage crops, is a very critical area of pesticidal usage. Improper treatments of these crops may easily leave residues of pesticides which will be de-

Clearance Status of Certain Pesticides on a Selected List of Crops (Parts per million)

	Chlordane	Dieldrin	DDT	Endrin	Heptachlor	Methoxychlor	Malathion	Parathion	Phosdrin
Alfalfa	—	0	—	—	.1	100	8	1	1
Beans (string)	.3	0	7	—	NR	14	8	1	0.25
Cabbage	.3	.25	7	0	.1	14	8	1	1
Corn (growing)	.3	—	7	—	.1	14	NR	1	1. (forage) 0.25 (grain)
Corn (stored)	—	—	—	—	—	—	8	—	—
Cucumbers	.3	.25	7	0	NR	14	8	1	0.25
Milk (Dairy Animals)	—	—	—	—	—	0	—	—	—
Peaches	.3	.1	7	—	NR	14	8	1	1
Peanuts (growing)	.3	—	7	—	.1	14	—	1	—
Peanuts (stored)	—	—	—	—	—	—	8	—	—
Pecans	—	—	NR	—	—	—	8	—	—
Potatoes	.3	.1	NR	0	.1	NR	8	NR	0.25
Poultry (Eggs)	—	—	—	—	—	—	0	—	—
Poultry (Meat)	—	—	—	—	—	—	4	—	—

The notation "NR" indicates that the prescribed usage has been found to be non-contaminating to the commodities involved when the required time and dosage limitations are followed. A dash indicates that there is no fully cleared status for the pesticide on the crop concerned and that no residues can be tolerated on the marketed commodity. It should, of course, be understood that insecticides other than those listed on the chart also have been cleared on these crops.

posited in the fatty tissues of the animals and carried into the milk. Meat products derived from these animals, as well as milk and dairy products may become contaminated through the use of animal feeds which contain illegal residues. The only insecticides of those listed here for illustration that have tolerances on alfalfa are heptachlor (0.1 ppm), malathion (8 ppm), methoxychlor (100 ppm), Phosdrin (1 ppm) and parathion (1 ppm). Phosdrin can be applied on alfalfa and clover at a dosage of 0.5 lbs. per acre with only a one day interval between the last application and cutting or pasturing.

Acceptances for registration are based, in each case, on definite directions for use, including specific dosages of the pesticidal chemical per acre and the needed time intervals between the last application and cutting or pasturing. There is on file, in each case, data which leads to the belief that the specified treatments would not leave residues on the specified forage crops in excess of the announced tolerance. The specific usage is believed, in each case, to be non-contaminating to milk and contaminating to meat only within the limits of an announced tolerance. The listed tolerances for chlordane (0.3 ppm) and DDT (7 ppm) apply to growing peanuts and growing corn. These tolerances apply only to the fresh vegetable corn and the nut peanuts, and not to corn or peanuts as forage crops. In all cases, the labels of DDT and chlordane products intended for use on corn and peanuts as foliage treatments are requested to include the warning that "treated forage should not be fed to dairy animals or animals being fattened for slaughter."

This warning would not be required on non-systemic pesticides when the directions were limited to pre-planting soil applications. The zero tolerance for dieldrin applies only to pre-planting soil applications since foliage treatments are not fully cleared. Those who are familiar with the labeling of dieldrin may be aware that USDA is, for the time being, continuing to accept certain limited usage of dieldrin as a foliage treatment for alfalfa and certain other forage crops. These usages were established after consultation with the Food and Drug Administration before the passage of the Pesticide Chemicals Amendment. Their continued acceptance will be dependent on further proof that they are non-contaminating to meat and milk. There may also be some interest in a recent clearance for the use of demeton (systox) on alfalfa. Substantial tolerances (12 ppm) for systox, have been published which cover dosages of 4 ozs. of the mixed phosphates per acre. A 21-day limitation from a single application applies in all such cases.

Cabbage

This crop has a tolerance for all of the pesticides which are listed. The pesticidal usage involved in this case is illustrative of several interesting problem areas. The pesticidal usage prescribed for chlordane, dieldrin and heptachlor permit only limited use of the formulated products for cabbage maggot. These treatments are pre-planting soil applications at the time of transplanting and for two or three weeks thereafter. In any case, chlordane should not be applied after the heads have started to form. In the case of DDT, treatments may continue up to 14 days of harvest if the outer leaves are stripped at that time.

Of interest is the zero tolerance established for endrin. This clearance allows treatments of the crop up to the time that the heads start to form. It is to be distinguished from the zero tolerance for dieldrin on alfalfa which is limited strictly to a pre-planting soil application.

Parathion has been cleared as a pre-planting soil application on cabbage at a dosage of 5 lbs. per acre. This usage is to be distinguished from the foliage treatments which are applied at a much lower dosage.

Growing Corn

Pesticidal usage on corn is frequently complicated by distinctions between sweet corn as a fresh vegetable and field corn as a feed and forage crop. Certain treatments of growing corn are registered as acceptable for use on corn as a fresh vegetable within tolerance limits and to field corn as a forage crop to be fed to beef cattle. In this latter case, it may be noted that the tolerance of 7 ppm of DDT applies only to the fat of beef animals and permits a dosage of 3 lbs. of DDT per acre of corn repeated once in any growing season. It may be noted that the clearances indicated by the tolerances for chlordane (0.3 ppm) and DDT (7 ppm) apply only to corn as a fresh vegetable.

Directions for the use of these pesticidal products, in all other cases, except certain home garden packages, should include the warning that treated forage should not be fed to dairy animals or to animals being fattened for slaughter. The zero tolerance established for dieldrin applies only to pre-planting soil applications and in this case no warnings against feeding to livestock would be required. The "N.R." clearance for malathion, as well as the tolerances for methoxychlor (14 ppm), Phosdrin (0.25 ppm), heptachlor (0.1 ppm) and parathion (1 ppm) are construed to apply primarily to corn as a fresh vegetable. However, no warnings against the use of this crop as animal feed or forage are required as residues in meat and milk would not be expected from the prescribed treatments. Note the tolerance of 1 ppm for Phosdrin on corn forage. This usage carries a one day pre-harvest interval.

Stored Corn and Peanuts

For stored corn and peanuts, the only tolerance which has been issued for the pesticides listed here is malathion. The specified directions would justify claims for protection of the commodities for one year or a full storage season. It should be noted, however, that piperonyl butoxide and pyrethrins also

(Continued on page 36)

Excerpts from a talk given at a meeting of the South Carolina Entomological Society at Clemson, March 20, 1958, by S. C. Billings, In Charge, Entomological Unit, Pesticide Regulation Section, Plant Pest Control Division, Agricultural Research Service, U. S. Department of Agriculture.

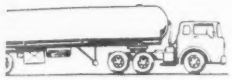
New from Sohio

the solution for granular fertilizers

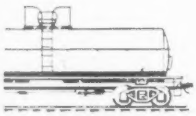
SOHIOGEN 16

(41.4% nitrogen)

saves up to $1.00 per ton in materials and manufacture



Sohiogen 16 . . . another pace-setting Sohio solution, developed by research, to match the fast changing scene in the fertilizer industry. And it's yours with a long list of benefits for granular manufacture . . .



- ★ **High fixed-to-free ratio — you can use more solution without over-ammoniation . . . require less acid neutralization.**
- ★ **Low salting out temperature — Sohiogen 16 is easier to handle and work with. Reduces storage problems. Low vapor pressure, too.**
- ★ **Produces hard granules — one size for ideal drillability, good storage. Minimum recycle ratio.**
- ★ **High nitrogen, low water content — reduces shipping costs, drying costs of finished goods.**
- ★ **Free-flowing, conditioned granules — result from perfectly adjusted Urea-Nitrate balance. Permits high solution usage with low moisture absorption of finished product.**

Sohiogen 16 has been tried and proved in full-scale, multi-plant manufacturing operations. Extensive tests show it can supply all of the nitrogen for granular fertilizers up to 12% — in some instances up to 15%.

For complete details call the "Man from Sohio" . . . see how new Sohiogen 16 can make money for you.

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ARKANSAS GETS FIRST LIQUID FERTILIZER PLANT

Arkansas' first liquid fertilizer manufacturing plant, recently completed at Patterson in the northeastern part of the state, is now in operation, according to an announcement by Paul Lovett, president and general manager of the Farmers Liquid Fertilizer Co., Inc., owners.

Housed in a new building, 40 by 60 feet of concrete blocks with brick and plate glass front, the plant is equipped to produce mixed liquid fertilizer, composed of nitrogen, phosphorus pentoxide and potash, according to Lovett.

J. C. Carlile, president of the Carlile Corporation of Denver, Colo., designer and builder of the plant, said that the reactor unit is capable of utilizing superphosphoric acid and wet process phosphoric acid, as well as the usual 75 per cent solution to produce liquid formulations. The superphosphoric acid is available from TVA's plant on a controlled allotment basis.

Aqua ammonia can be produced at a rate of one 10,000 gallon tank car in about 5 hours, and 20 tons of ammonium phosphate solution, 8-24-0, can be produced in an hour, Carlile reports.

PENNSALT DISPOSES OF PAULSBORO FERT. PLANT

An option has been exercised by Dixon Chemical Industries, Inc., to purchase all of the assets and business of Pennsalt Chemicals Corp.'s I. P. Thomas Div., except a 70-acre tract at Paulsboro, N. J., where the Thomas fertilizer plant is located, according to Pennsalt president William P. Drake. The tract is being leased to Dixon with an option to buy it.

An evaluation of the company's long-range objectives, Drake stated, brought about the decision that the manufacture and sale of fertilizers is not a logical field of specialization for Pennsalt. It is expected that the Thomas brand names and products will be continued by Dixon under the proposed purchase.

MEYER DEDICATES NEW LOS ANGELES FACILITY, MOVES SEATTLE OFFICES

Ceremonies dedicating its new offices, warehouse and bulk storage facility at 2060 Garfield Ave., Los Angeles, were held April 2 by Wilson & Geo. Meyer & Co.

The new facility, erected at a cost of about $500,000, doubles the Meyer firm's Southern California space at 4800 District Boulevard, which it occupied only seven years ago.

New Seattle offices of the firm are at 318 Queen Anne Ave. The move is to facilitate handling the firm's increased business in the Northwest, to provide more parking facilities for customers and to give the enlarged office staff more room.

DOW ESTABLISHES MARINE TERMINAL AT BAY CITY

Dow Chemical Co. is establishing its own Marine Terminal at Bay City, Mich., and expects to have it in operation when traffic resumes on the Great Lakes this spring.

Gordon R. Anderson, traffic manager for Dow's Midland Div., said that "by starting this operation now, we hope to be able to take full advantage of the St. Lawrence Seaway when it is completed in 1959."

The terminal will handle the full line of Midland Div. products, in containers ranging from small packages to large metal and fiber drums.

Chartered vessels will load with cargoes at Bay City and at the Sarnia, Ont., docks of Dow Chemical of Canada, Ltd., and then sail for Rotterdam, Holland, via the St. Lawrence route. Rotterdam is the headquarters of Dow's Dutch subsidiary.

A Danish vessel has been chartered to make several regular trips to Rotterdam during the coming season.

PART II OF BUYING STUDY BY NITROGEN DIV. COMING

Next month we will have a report on the relative value of farm newspapers, TV, radio, and other media in influencing the farm buyer of fertilizer. It will be based on Part II of the four state (Ohio, Indiana, Michigan, Illinois) fertilizer buying study conducted for Nitrogen Division, Allied Chemical Corporation, by National Analysts.

Part I, released in January, is available without charge from Nitrogen Div. to anyone interested in fertilizer marketing. Very briefly, the findings of Part I, as summarized by Nitrogen Div., are:

Buying decision usually comes in the spring. There is little shoping around due to dealer loyalty and belief that there are no price differences for the same quality materials.

When there is shopping around, it is mainly in search of a price advantage.

Either because of lack of storage facilities or inability to determine needs, most of the sample (400 statistically selected farmers) do not buy all of their fertilizers at one time.

Very few believe there is any difference between fertilizers of different manufacturers which are of the same form and analysis.

The dealer is the main source of information about form, analysis and amount to be used. (Brand is seldom discussed.) Farm magazines and state farm papers are the primary mass media source of information.

Dealers usually carry multiple brands.

Very seldom do dealers attempt to get the farmers to switch brands.

SALES AND EARNINGS IN 1957

AMERICAN POTASH & CHEM.

Record sales of $42,837,213 were reported by American Potash & Chemical Corp. for 1957 compared with $41,750,628 for the preceding year.

Net income for 1957 declined 7.8 per cent to $4,706,235, equal after preferred dividends to $2.35 a share on the 1,908,444 shares of Class A and Common stocks outstanding at the end of the year.

COMMERCIAL SOLVENTS

Commercial Solvents Corp. reports that in 1957 consolidated net earnings were $1,449,638, equal to $.53 per share on 2,741,422 shares of common stock after a net charge of $.27 per share resulting from application of income from Northwest Nitro-Chemicals Ltd. to the firm's investment therein. This compares with $2,974,960, or $1.09 per share in 1956, after extraordinary net charge of $.12 per share.

Sales reached an all time high, amounting to $65,931,804, compared with $62,579,560 for the previous year.

Earnings were adversely affected, the company said, by the expense of starting up four major new production units during the year and by extremely competitive market conditions which prevented increases in selling prices to offset rising costs.

DIAMOND ALKALI CO.

A gain in dollar sales and a decline in earnings for 1957 was reported by Diamond Alkali Co.

Sales, which continued their upward trend for the fifth successive year, totaled $122,640,000, compared to $121,260,000 in 1956. Net income in 1957 amounted to $7,035,000 or $2.53 per share against the 1956 record net earnings of $10,380,000 or $3.73 per share, when adjusted to current shares outstanding—a decrease of 32 per cent.

Commenting on the effect of Black Leaf operations on Diamond's earnings picture, Raymond F. Evans, chairman and president, said, "After absorbing losses on Black Leaf operations for nearly three years, at year-end we sold the house and garden products line including inventories, production facilities and the Black Leaf trade name. This consumer products business depends for its success upon major merchandising and promotional effort. We had the alternative of substantially expanding our marketing activities in the consumer field or eliminating this activity which did not utilize to any important degree the particular technical skills and chemical knowledge we possess. We chose the latter course."

Evans said the company is making an effort to reduce costs and improve efficiency. However, he does not "presently foresee any substantial relief from what has come to be known as the 'cost-price squeeze'."

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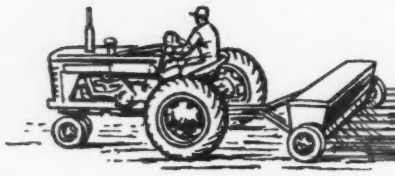

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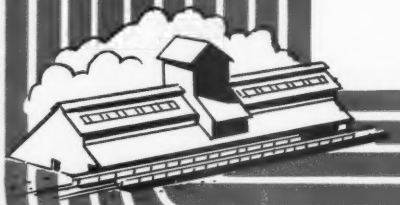

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FARM CHEMICALS

— *Business & Management* —

SHEA CHEMICAL CORP.

A 100 per cent increase in sales and 150 per cent increase in earnings has been reported by Shea Chemical Corp. for the fiscal year ended Nov. 30. Net sales reached $20,554,705, compared to $10,237,628 for 1956. Net profit after taxes was $1,873,577 compared to $747,828 for 1956. Earnings per common share rose from 52 cents in 1956 to $1.35 in 1957.

Despite the company's unusual performance last year, Vincent H. Shea, president, said, "Start-up expenses held earnings down. Full benefit of our expanded facilities was not experienced until the third quarter of the year."

STAUFFER CHEMICAL CO.

Total net sales of Stauffer Chemical Co. during 1957 were $156,871,000, a decrease of 1.4 per cent from 1956 record high sales of $159,090,000. Agricultural chemical sales decreased 13 per cent, primarily as a result of two unrelated developments, said Stauffer: adverse weather conditions early in the year in major market areas and systematic elimination of certain marginal products and sales areas.

Net earnings were $13,101,000 or $3.71 per share on the 3,531,016 shares outstanding at the end of the year, compared with $13,745,000 or $3.89 per share in 1956. Earnings per share in 1957 before adjustment for the 2 per cent stock dividend paid in December amounted to $3.78 as against $3.97 in 1956 computed on the same basis.

The capacity of its pilot plant for production of Trithion phosphate insecticide was quadrupled during 1957, Stauffer reported, but was still insufficient to meet the demand stimulated by experimental sale of this new product. A large commercial plant has just been completed at Henderson, Nevada, and is now in operation.

DIRECTORS OK MERGER OF LINDSAY CHEM. INTO AP&CC

Boards of directors of American Potash & Chemical Corp. and Lindsay Chemical Co. have agreed to a merger of Lindsay into American Potash, subject to approval by shareholders of each company at meetings to be held April 29.

If the merger is consummated, Lindsay Chemical will be operated as the Lindsay Chemical Div. of American Potash. Charles R. Lindsay III would become a director and vice president of American Potash and continue as president of the Lindsay Div.

SALMON SALES CO. EXPANDS

The Salmon Sales Co., near Clarksdale, Miss., is expanding its liquid fertilizer plant with a 50,000 gallon unit. J. C. Carlile Corp., the builders, will supply applicators and nurse tanks.

When installation is completed, customers may drive up to a meter with their own equipment.

TVA CONTRACT TO DUPONT

A contract for brush control material worth approximately $155,040 recently was awarded E. I. duPont de Nemours & Co., Inc., by the Tennessee Valley Authority, that agency has announced.

OLIN MATHIESON UPS SULFURIC ACID CAPACITY

A 250 per cent capacity increase in sulfuric acid production has been made possible by construction of a new facility adjacent to the Beaumont, Tex., plant of Olin Mathieson Chemical Corp.

S. L. Nevins, vice president, said additional construction now underway, includes a new ammonium sulfate plant.

Major part of the new facility is a 500-ton per day sulfuric acid plant, Nevins said. The sulfuric acid regeneration plant operates on raw materials from nearby oil refineries and includes a special scrubber to keep sulfur dioxide from escaping into the air. The scrubber is based on a Cominco Process for which Olin Mathieson is exclusive licenser in the United States.

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FARM CHEMICALS People

American Cyanamid Co. T. Leland Wilkerson, general sales manager of the Phosphates and Nitrogen Div., died at his home in Greenwich, Conn., March 10. He was 59 years of age, and had suffered from a heart condition.

American Potash & Chemical Corp. Frederick Marsic has been elected secretary and Henry DeArmond assistant secretary. Marsic, formerly assistant secretary, retains his other positions as assistant treasurer and office manager. DeArmond was administrative assistant prior to his present appointment.

Marsic

DeArmond

The company has appointed Ernest Levens to the new position of coordinator of safety and industrial hygiene. He had been head of the organic chemistry section at the main research laboratory at Whittier, Calif.

Collier Carbon and Chemical Corp. Appointment of Robert G. Hickle as manager, southern area, agricultural chemical sales, and Richard L. Rahn as coordinator of agricultural chemical sales, has been announced.

Hickle formerly was assistant manager, agricultural chemical sales; Rahn formerly was supervisor, solid fertilizer sales.

Hickle

Rahn

Diamond Alkali Co. James O. King has been promoted to manager of agricultural chemical sales. He will spearhead a newly expanded, long-term sales and technical service program. He takes over his new assignment following three years as a special staff assistant in the company's sales department.

King

Ferro Corp. Ralph S. Tyler Jr. has been elected to the board of directors, filling the board vacancy created by the death of C. Dudley Clawson.

Grand River Chemical Div., Deere & Co. Former sales representative Stafford L. Beaubouef becomes southern sales supervisor, located at the plant's general offices in Pryor, Okla. He is succeeded as sales representative for the company's nitrogen products in Arkansas, Louisiana and East Texas by Rush E. McCarty.

Beaubouef

McCarty

International Minerals & Chemical Corp. John D. Zigler, general manager of the Plant Food Div., was awarded a 25-year pin by the company's administrative vice president, Thomas M. Ware, at a recent luncheon meeting.

Kelly-Western Seed Div. Jack Glenn has been appointed to the national sales promotion staff for PAX crabgrass and soil pest control. He will work in the Salt Lake City office with other members of the sales staff in the appointment and supervision of factory representatives and jobbers.

Glenn

Merck & Co., Inc. Rounding out the reorganization of its sales and marketing activities, the Chemical Div. has appointed Fred O. Church sales manager for the Southern Region, with headquarters in Atlanta, and Frank W. Warren sales manager for the Mid-Atlantic Region, with headquarters in Philadelphia.

National Safety Council. Edwin L. Alpaugh is new director of industrial hygiene and staff representative for the chemical section.

Naugatuck Chemical Div. U. S. Rubber Co. James A. Wilkerson has been added to the field development staff of the Agricultural Chemical Div., and assigned to the Pacific Northwest area.

Sinclair Chemicals, Inc. James C. Lamb, new sales representative for the Nitrogen Div. will handle sales of Sinclair anhydrous ammonia and nitrogen solutions in Illinois, Wisconsin and portions of

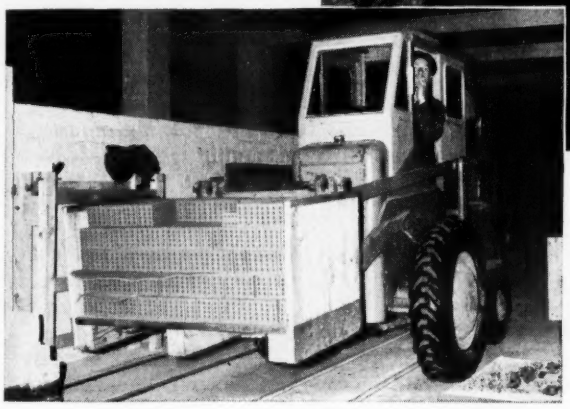
Lamb

Factory Modernizes Material Handling Methods with FIVE TRACTOLOADERS®

TWO Model TL-6's — each with a ½-cu yd Tip-Back Bucket. (right)

ONE Model TL-6 with a lift fork — interchangeable with bucket. Ideal for transporting materials over unpaved storage area. (below)

TWO Model TL-10's — each with a 1-cu yd Tip-Back Bucket.



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FARM CHEMICALS People

Iowa and Minnesota. He will locate in Rockford, Ill.

Spencer Chemical Co. Lewis Morgan has been assigned to the position of technical service representative in the mid-south district, including Arkansas, Kentucky, Louisiana, Mississippi, Tennessee and Texas. He replaces Charles J. Major, recently transferred to the southeastern district. His headquarters will be in the company's Memphis office.

Morgan

Union Carbide Chemicals Co., Div. of Union Carbide Corp. Robert J. Zedler has been appointed product manager for Sesone preemergence herbicide and Mylone soil fumigant. Zedler, who has been directing technical development of the two products, will now coordinate both technical and sales development.

Zedler

West Virginia Pulp & Paper Co., Polychemicals Div. appointments: Richard C. Feaster to sales representative for the Philadelphia area and George J. Tazelaar for the Cleveland area.

Feaster

Tazelaar

Formerly Feaster was with Yale & Towne Mfg. Co. and Scott Paper Co. Tazelaar goes to the company from Armour & Co., Chicago.

INSECTICIDE LABELING

(Continued from page 28)

have fairly liberal tolerances on these, as well as a number of other stored commodities.

Dairy Animals

None of the pesticide chemicals listed here are cleared for use on dairy animals, except for a specialized treatment for horn flies using the 50 per cent wettable powder of methoxychlor. Pyrethrin-piperonyl butoxide mixtures are also cleared for use on dairy animals. Treatments of the barn and farm buildings with fly baits have usually been found to be non-contaminating to milk. When the animals are excluded at the time of application and precautions are taken to prevent the contamination of feed and water, methoxychlor and malathion may be used as barn sprays.

Peanuts (Growing)

The tolerances for chlordane (0.3 ppm) and heptachlor (0.1 ppm) are designed only to permit soil applications up to the time of pegging. The use of DDT is also accepted on this crop as a foliage treatment. However, in this case, the tolerance only applies to peanuts themselves. The label should, in this case, include the warning that peanut hay should not be fed to dairy animals or animals being fattened for slaughter. This warning is not required in the case of heptachlor and methoxychlor.

Potatoes

It has frequently been held that potatoes were not subject to contamination by foliage applications of non-systemic pesticides. However, the Food and Drug Administration has published an 8 ppm tolerance for malathion as a foliage treatment. It may be observed that the clearances for DDT, parathion and methoxychlor are based on evidence that foliage treatments with these pesticides do not deposit pesticidal residues in the harvested potatoes. ▲

ORGANIC FERTILIZER MATERIALS

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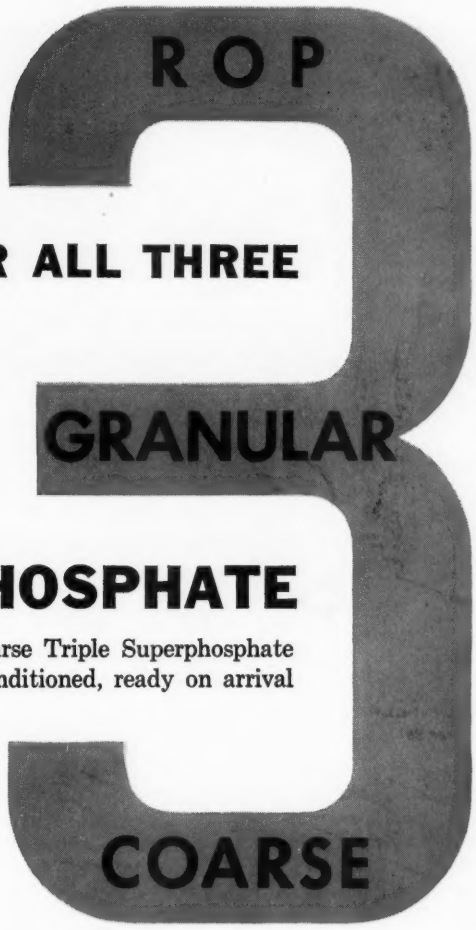

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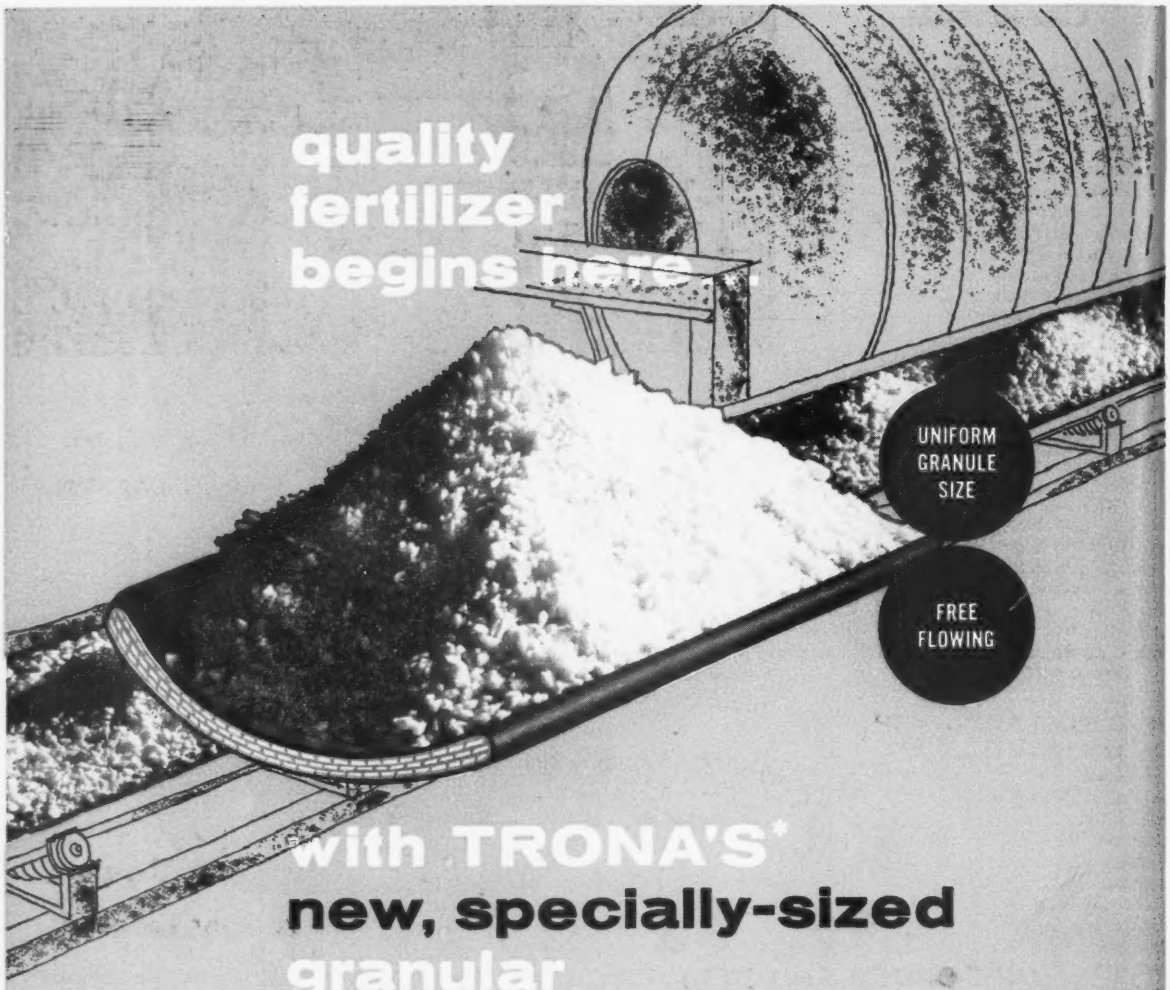

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POTASH

Quality fertilizer granulation begins with **Trona's** all-new, specially-sized granular muriate of potash. The carefully regulated and controlled screen size results in reduced segregation and uniformity of finished product. Whatever your mixing method—batch or ammoniation, **Trona's** new granular assures a quality fertilizer uniform in particle size.

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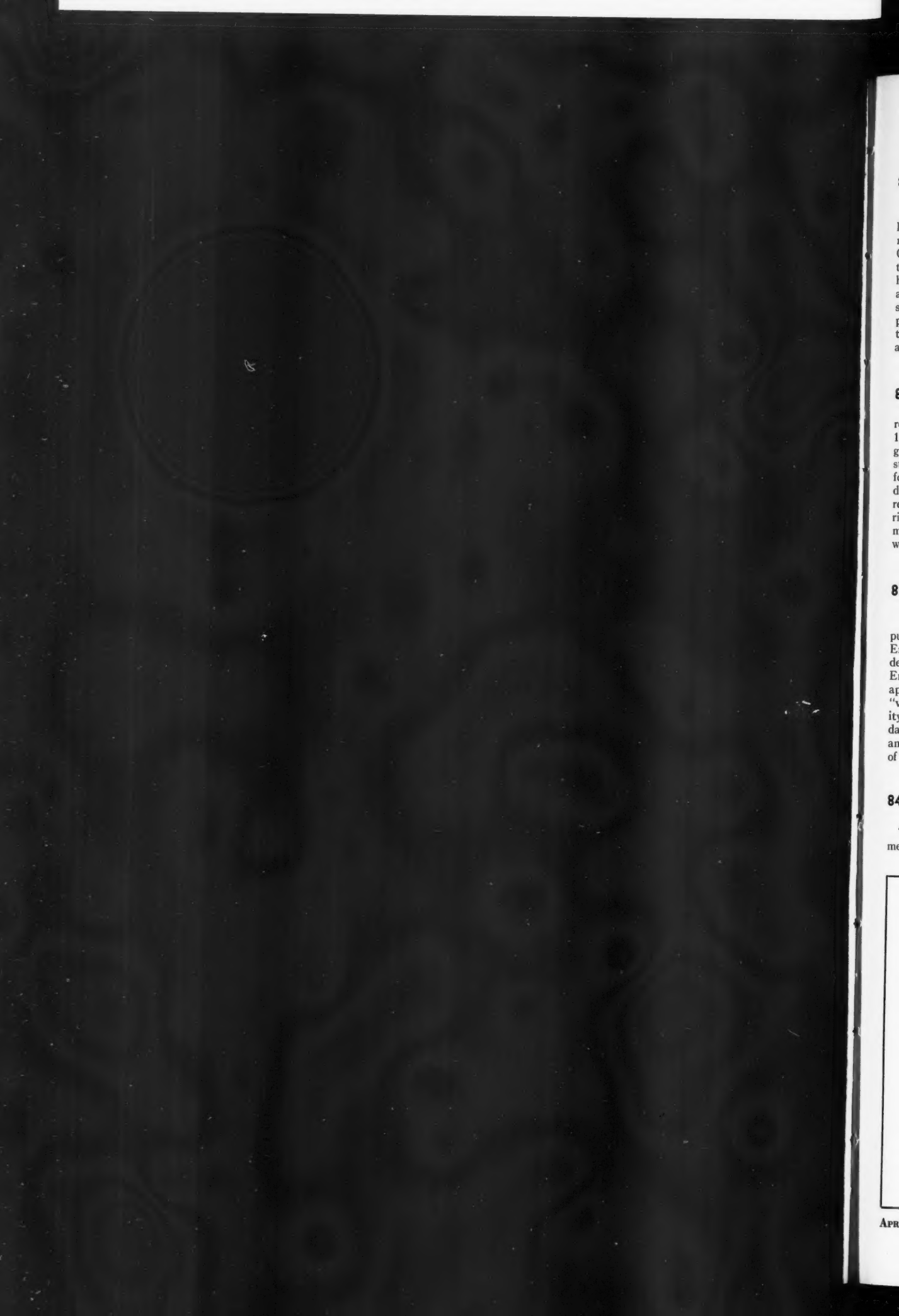
CALS



Chemicals

81—SOHIOGEN SOLUTIONS FOR LIQUID FERTILIZERS

"Sohiogen Nitrogen Solutions for Liquid Fertilizer Manufacture" is the title of a new book published by Sohio Chemical Co. Beginning with a definition and history of liquid fertilizer, the book discusses how liquid fertilizers are made, chemical and physical properties, handling nitrogen solutions, and safety. A list of Sohiogen products and individual product information sheets also are included. To secure a copy

CIRCLE 81 ON SERVICE CARD

82—TWO-WAY ACTION

Crag fly repellent has a two-way action, reports Union Carbide Chemicals Co. 1. The repelling action keeps biting flies, gnats and mosquitoes away from livestock on pasture, and in some oil spray formulations repels them for three to four days. 2. It extends the killing power of residual toxicants and synergizes pyrethrins in the spray formulation. Full information on the formulation of fly sprays with Crag fly repellent is yours by

CIRCLING 82 ON SERVICE CARD

83—FORMULATION WITH EMCOL EMULSIFIERS

Emulsol Chemical Corporation has just published "Pesticide Formulation with Emcol Emulsifiers," which the company describes as a "full use data handbook." Emulsol says it has a double-barrelled approach to help pesticide formulators—"versatile emulsifiers of unsurpassed quality for top performance" and "full use data based on both laboratory experience and actual field tests." For your copy of the handbook,

CIRCLE 83 ON SERVICE CARD

84—DATA REPORT ON METHACRYLONITRILE

Typical properties and reactions of methacrylonitrile and a discussion of the characteristics of polymethacrylonitrile in a variety of end-use applications are set forth in a technical data report by Eastman Chemical Products, Inc. The presence of a vinyl linkage and a cyanide radical on a short molecule make methacrylonitrile an excellent intermediate for the chemical synthesis of a variety of acids, amides, amines, esters and nitriles, says Eastman. These compounds are of interest for use as solvents and plasticizers and as intermediates for the preparation of insecticides, dyes and pharmaceuticals. For the data report,

CIRCLE 84 ON SERVICE CARD

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85—POWDERED ACID INHIBITOR BULLETIN

Sole Chemical Corp. has published a technical bulletin describing Sole-Onic PH-1, its new powdered acid inhibitor. This material may be formulated with dry acids such as sulfamic, bisulfate, oxalic, citric, etc., or with liquid acids such as sulfuric, hydrochloric, phosphoric, etc., says the manufacturer. Copies are available by

CIRCLING 85 ON SERVICE CARD

86—PENCO WEED KILLER

Answers to five questions about Penco Endothal Weed Killer are given in a 6-page folder from Pennsalt of Washington Div.: What is it? What broadleaved weeds and annual grasses are controlled? How does it work? When is it applied? and How much is used? If you're interested in the answers,

CIRCLE 86 ON SERVICE CARD

87—GIBBERELLIN REVIEW

Research workers, county agents and others with a technical background will be interested in the 18-page technical bulletin issued by Merck & Co. reviewing the latest research findings on the uses of the gibberellins. The bulletin contains an annotated bibliography of 188 pertinent scientific papers.

Merck, which produces the plant growth stimulant under the registered trademark "Gibrel," has made more than 30 grants-in-aid to agricultural experiment stations to study the effect of the product on crop plants. The bulletin is part of the company's program to keep the public informed on progress being made at stations which are testing the new compound. To secure a copy,

CIRCLE 87 ON SERVICE CARD

88—NEW GRANULAR TRIPLE SUPER

International Minerals & Chemical Corp. says its new granulated triple super is non-crumbling, free flowing . . . and it ammoniates. Each granule has a unique sponge-like structure reported to facilitate ammoniation and contribute to desirable granular texture in mixed goods. It's packed with customer-pleasing qualities for direct application, too, according to IMC; the granules won't bridge over in a fertilizer drill or crumble during handling or spreading. For full information

CIRCLE 88 ON SERVICE CARD

Process Equipt.

89—INSECTICIDE GRINDING MILLS

All modern concentrate formulations as well as sulfur bearing products and other field strength dusts can be handled with equal efficiency in the Raymond Roller Mill, reports Combustion Engineering, Inc. The company said that all finenesses of finished formulations commonly used . . . from 80 per cent passing 325-mesh to 99.5 per cent or better minus 325 mesh . . . are available from the mill. For a copy of the company's bulletin on insecticide grinding mills

CIRCLE 89 ON SERVICE CARD

90—STEDMAN FERTILIZER INDUSTRY EQUIPMENT

The major items of equipment it manufactures specifically for the fertilizer industry are covered in a newly published 24-page bulletin by Stedman Foundry & Machine Co., Inc. Included are general illustrations, descriptions and dimensions of batch mixers, continuous ammoniators, tailings mills and screens. The Stedman-Snyder Granular Process also is briefly described. For your free copy,

CIRCLE 90 ON SERVICE CARD

91—NEW BRADLEY CATALOG

Latest information and changes in its line of semi-fine and fine pulverizing screen and pneumatic roller mills are included in Bradley Pulverizer Co.'s new 30-page catalog. Illustrated in two colors,

the catalog contains detailed drawings, specifications, capacity, construction and maintenance facts on its screen-type mills, the Bradley Hercules Mill—Type "6000" and the Junior Hercules Mill—Type "B," as well as complete information on its three pneumatic mills, the Type "8," Type "9" and Type "10."

To obtain the catalog,

CIRCLE 91 ON SERVICE CARD

92—DATA SHEET ON PUNCH CARD READER

A product data sheet offered by Richardson Scale Co. describes the new PCR Control (Punched Card Reader) for automatic control of blending, batching and proportioning operations. Illustrated with four photographs and one cutaway installation drawing, the sheet gives full details on how formula changeovers are made. PCR Control is designed for use with electronic proportioning systems, and the data sheet outlines unit's use with IBM or other punched cards. For a copy,

CIRCLE 92 ON SERVICE CARD

93—MICRONIZER BULLETIN

Fluid energy grinding is described and typical grinding data for various materials is given in a new technical bulletin on the Micronizer offered by Sturtevant Mill Co. Also included is a cross-section drawing of the Micronizer and a flow sheet of a complete fluid energy grinding unit. Sizes, pressure requirements and capacities are tabulated. Information is also given on how to obtain custom or experimental fine grinding service from Sturtevant. For a copy,

CIRCLE 93 ON SERVICE CARD

Materials Handling

94—BULK HANDLING SHIPPING CONTAINERS

A revised bulletin on bulk handling individualized shipping containers has been announced by Sprout, Waldron & Co., Inc. Bulletin 132-A describes steel, stainless steel and aluminum designs for railroad or truck shipment of raw and semi-processed materials. Some of the advantages claimed for these shipping containers are less floor space; reduced handling; elimination of capping, sealing, labeling, minimizing of product waste; and avoidance of contamination. If you'd like a copy,

CIRCLE 94 ON SERVICE CARD

95—PREVENTATIVE MAINTENANCE CHART

A new electric fork truck preventative maintenance chart from Lewis-Shepard offers tips to obtain maximum operating efficiency and pin-points 28 specific areas that should be inspected either daily, weekly or monthly. As each point is inspected, the truck operator or maintenance man initials the appropriate block in the chart. This gives supervisory personnel definite assurance that the preventative maintenance program is being carried out as prescribed. Free copies are available by

CIRCLING 95 ON SERVICE CARD

96—PAYLOADERS UP PRODUCTION

Many plants have testified that they get more and better performance from Payloader tractor-shovels, reports The Frank G. Hough Co. One fertilizer plant superintendent speaking of the new style model HA says, "Roll-back, breakout bucket action and torque converter drive is an ideal combination. Production increased 30 per cent along with lower maintenance and less tire wear and less operator fatigue."

For information on what the new HA (2,000 lb. carry) and larger HAH (3,000 lb. carry) can do for you,

CIRCLE 96 ON SERVICE CARD

Miscellaneous

97—HOW TO SPECIFY CORRUGATED BOXES

Detailed steps in specifying a new corrugated box or redesigning your present box are explained in a new edition of "How to Specify Corrugated Boxes" published by Hinde & Dauch, Sandusky, Ohio. The 36-page booklet illustrates and discusses conventional types of corrugated board. Seven basic box styles and 60 corrugated packing devices used by the H&D package engineer to provide product protection are covered in this guide. A copy is yours if you

CIRCLE 97 ON SERVICE CARD

See pages 48, 50 and 52 for information on these Reader Service Numbers:

102—New Twin Mixer
104—Soiltest Ovens
103—Sprayer Trailer
105—Hercules Delnav
106—Trithion Insecticide

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98—AERIAL APPLICATORS JOB LOG & SAFETY FILE

Monsanto Chemical Co. says it will be happy to send you a sample copy of its Aerial Applicator's Job Log and companion piece, the Monsanto Chemical Safety File folder. They were designed to help aircraft operators simplify and consolidate their job records, and offer a reminder of the methods for handling and using parathion and methyl parathion safely. If you'd like to have them,

CIRCLE 98 ON SERVICE CARD

99—AEROSOL INSECTICIDE FOLDER

An aerosol insecticide folder is available from Dodge & Olcott, Inc. The company reports that today one of the industrial perfumer's most frequently encountered requests is the development of masking agents for aerosol insecticides, and says that its Industrial Odorant and Aerosol Testing Laboratory can provide "performance tested" masking agents for any of the popular active ingredients. For a copy of the aerosol insecticide folder,

CIRCLE 99 ON SERVICE CARD

100—CHECK VALVES

Schutte and Koerting Co. has a new bulletin describing its line of swing check valves designed for service in steam or water lines to protect against reverse flow. Detailed information and sectional drawings on SK's basic swing check valve and modifications are included, along with a list of accessories. Copies can be obtained by

CIRCLING 100 ON SERVICE CARD

101—COLE TANK BOOKLET

"Tanks and Equipment for the Plant Food Industry" is the name of a booklet being offered by Cole Manufacturing Company. This booklet gives information on welded aluminum tanks in all sizes and types for nitrate solutions. You can obtain a free copy by

CIRCLING 101 ON SERVICE CARD

Arcadian® News

Volume 3 | For Manufacturers of Mixed Fertilizers | Number 4

Nitrogen Division Broadcasts to Millions of Farmers....

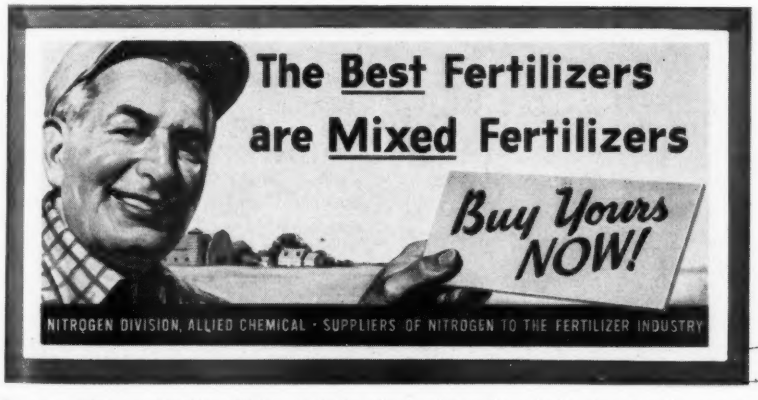
Buy Your Mixed Fertilizer Now!

Everybody is talking about the late season. Nitrogen Division, Allied Chemical, is doing something about it!

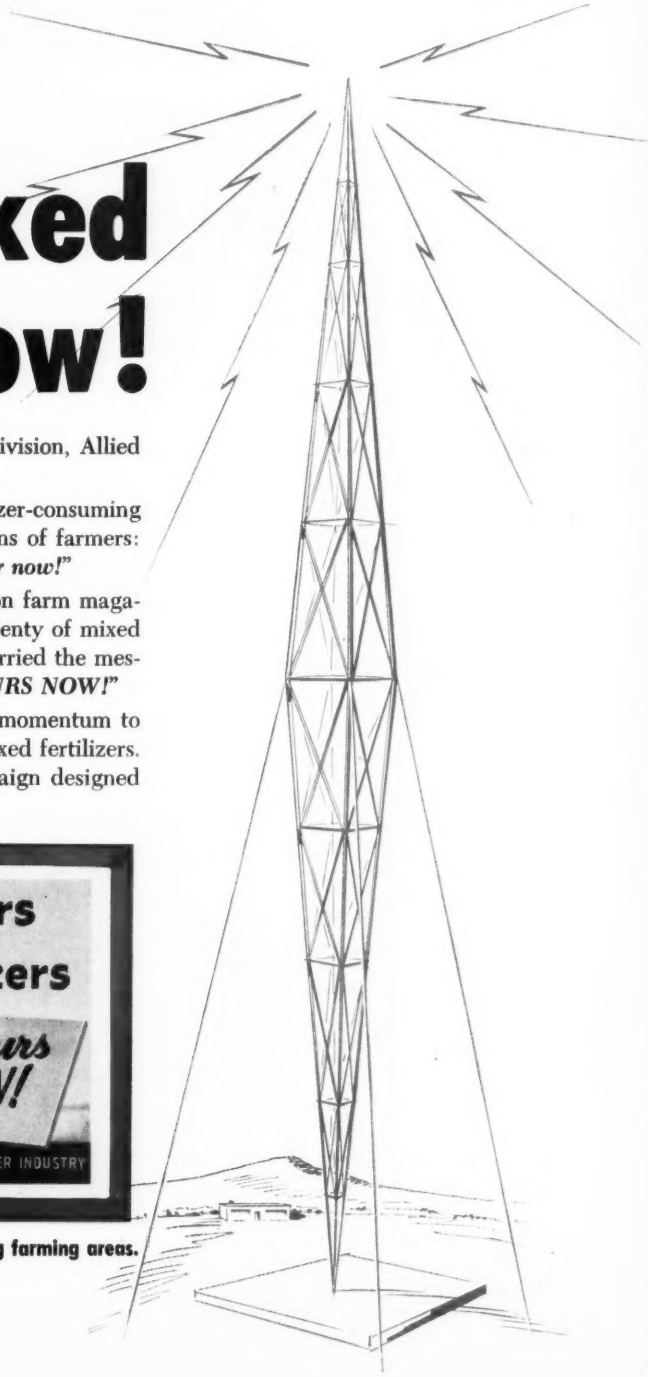
On regular broadcasts on 60 radio stations in leading fertilizer-consuming areas, Nitrogen Division began in early March to tell millions of farmers: *"Don't wait . . . you may be late . . . buy your mixed fertilizer now!"*

Throughout the winter and spring, many Nitrogen Division farm magazine advertisements have stressed the importance of using plenty of mixed fertilizers. Hundreds of Nitrogen Division billboards have carried the message: *"The Best Fertilizers are Mixed Fertilizers—BUY YOURS NOW!"*

The big radio campaign is now adding extra impact and momentum to the Nitrogen Division effort to speed-up the movement of mixed fertilizers. We trust that you are pleased with the results of this campaign designed to help you mix and ship more tonnage.


The Best Fertilizers
are Mixed Fertilizers
Buy Yours NOW!
NITROGEN DIVISION, ALLIED CHEMICAL · SUPPLIERS OF NITROGEN TO THE FERTILIZER INDUSTRY

Here is a Nitrogen Division billboard in hundreds of locations in leading farming areas.



NITROGEN DIVISION *BUY FERTILIZER NOW* RADIO BROADCASTS

Here are three typical Nitrogen Division radio broadcasts now going out over 60 radio stations to urge farmers to buy mixed fertilizer now:

It's a good idea every year to buy mixed fertilizer early so that you get what you want and have it on hand when you need it. This year it's far more important than usual to place your order now! Many farmers have delayed buying mixed fertilizer because of weather conditions. It won't be long before thousands of farmers will all be wanting mixed fertilizer at the same time. Some farmers will be disappointed. They will be waiting in line for mixed fertilizer when they need it. Fertilizer manufacturers will find it difficult to supply a big rush of late orders. Don't wait . . . you may be late! See your fertilizer dealer today! Buy your mixed fertilizer now and take it now!

If you are a farmer, there's no need to tell you that this is a late season. It's a late season all over the country due to a cold winter and a late spring. It's a late season for you and a late season for the manufacturer who makes the mixed fertilizer you plan to use. That's why it will pay you to buy your mixed fertilizer now. Buy it now and take it now! That's mighty good advice. Farmers who wait too long may find it's too late to get the mixed fertilizer they want. Fertilizer manufacturers are going to find it difficult to supply a big rush of late orders. Don't wait . . . you may be late. See your dealer today and place your order for mixed fertilizers.

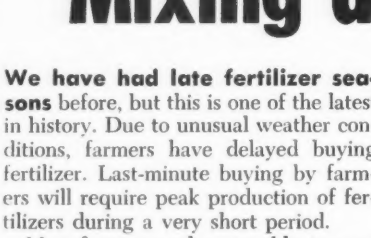
When you need your mixed fertilizer this year, will you have it on your farm, or will you be waiting in line to get it? The answer to this question depends on what you do right now. This is a late season due to weather conditions. Fertilizer manufacturers will have to work day and night to supply a lot of late orders for mixed fertilizer. Some farmers will be disappointed. They will be waiting in line for mixed fertilizer when they need it. Don't wait . . . you may be late. See your dealer today. Buy your mixed fertilizer now and take it now. That's the best way to make sure you get the amounts and grades of mixed fertilizers you want.

Methods that Speed Mixing and Curing

We have had late fertilizer seasons before, but this is one of the latest in history. Due to unusual weather conditions, farmers have delayed buying fertilizer. Last-minute buying by farmers will require peak production of fertilizers during a very short period.

Manufacturers who are able to produce mixed fertilizers at a rapid rate will make more sales. Getting the tonnage out is a daily challenge that requires all the ingenuity and enterprise the manufacturer can muster. Mixing, curing, bagging, and loading on trucks will have to be done much faster than in normal seasons.

During previous rush periods, manufacturers developed ways to speed output. This know-how is valuable today. A brief review of some of the methods now being used in the industry may be helpful to you.



Here is one of the many Nitrogen Division full-page farm magazine advertisements, promoting the use of mixed fertilizers.

Advance Planning

It pays to have an adequate inventory of raw materials. The best way to meet production schedules is to estimate requirements and place orders in advance so that supplies are on hand when needed. A steady flow of raw materials is vital to continuous production.

It's also important to have an inventory of popular analyses of mixed fertilizers on hand. Mixing and storing grades you know will be in demand helps to fill more orders to satisfy more customers.

Plan to use late-season, extra bin space for dumping in small piles for faster curing. Plan to keep bagged fertilizers stacked low to reduce bag set.

Prompt truck loading moves out more tonnage. Organize traffic patterns for

incoming and outgoing trucks to speed handling.

During rush work, extra safeguards are essential to the protection of equipment and personnel. A regular routine for checking equipment avoids breakdowns. Most accidents are caused by green help. New men need training and supervision. Taking time to teach them their jobs increases efficiency and safety.

Maximum Ammoniation

Ammoniated mixtures made with large amounts of solid nitrogen materials cure slowly. Decreasing the amounts of solid materials and increasing the use of ARCADIAN® Nitrogen Solutions produces mixtures that cure more rapidly.

Direct from tank car or storage, these Solutions can supply in one operation different forms of nitrogen often added as separate materials. This saves time, labor, traffic, and expense.

Using ARCADIAN Nitrogen Solutions at maximum rates of ammoniation produces mixtures that cure quickly. The maximum ammoniation rate pays off in extra volume of better quality fertilizers that can be bagged promptly for fast delivery. Some manufacturers successfully mix and ship the same day.

Reduce Water Content

Selection and use of ARCADIAN Nitrogen Solutions with a low water content helps to speed up drying and curing of ammoniated mixtures. This is especially true when the superphosphate has a relatively high water content.

Your Nitrogen Division technical service man can help you select NITRANA® and/or URANA® Nitrogen Solutions with low water content that will help you speed your production of good quality mixed fertilizers.

Crystal Structure

The improved crystal structure produced by ammoniating with URANA Nitrogen Solutions is a big help to manufacturers during this rush season. The cube-shaped crystals have much less tendency to bind together.

This means softer set in storage piles, easier, faster handling from bulk to bagging, and far less secondary caking in the bag. URANA Nitrogen Solutions also supply three forms of nitrogen – ammonia, ammonium nitrate, and urea.

Some manufacturers switch from granular fertilizers to pulverized fertilizers during the rush season to increase production. By using URANA Nitrogen Solution for faster cooling and curing, they are able to double their output.

NITROGEN DELIVERIES DEPEND ON TANK CARS

Don't hold tank cars — keep 'em rolling to speed Solutions shipments on schedule

Nitrogen Division, Allied Chemical, has geared all of its facilities and operations to rapid delivery of Nitrogen Solutions to help you meet production schedules during the rush period. The goal is *on-time* shipment every day.

As America's leading producer of the most complete line of Nitrogen Solutions, Nitrogen Division is equipped to provide the best available service. The Nitrogen Division plants at Hopewell, Virginia, Ironton, Ohio, and Omaha, Nebraska, are conveniently located for fast shipment to many areas.

Nitrogen Division has always operated the largest fleet of Nitrogen Solutions tank cars in the industry, and has recently added 200 new units especially designed for handling Nitrogen Solutions. Nitrogen Division maintains a network of intransit locations to expedite shipments.

Nitrogen Division is doing its utmost to keep all of its delivery facilities operating at top efficiency during this period of peak demand. Extra effort is being exerted to keep the tank cars rolling to your plant to supply you with Nitrogen Solutions when you want them.

The only thing that can interfere with this service is a tank-car bottleneck. Despite the fact that Nitrogen Division is operating more tank cars than ever before, if too many fertilizer manufacturers hold too many tank cars too long, a shortage may develop to slow down deliveries.

You can cooperate to help Nitrogen Division give you better service by returning empty tank cars as quickly as possible. Empty cars sitting on sidings can create a bottleneck. So unload tank cars as fast as you can and return them as fast as you can.

You cannot mix and ship tonnage on schedule if you are waiting for Nitrogen Solutions. And Nitrogen Division cannot ship Solutions on schedule if tank cars are not available. Don't hold tank cars! Keep them rolling to serve you!

Ask Nitrogen Division

Nitrogen Division technical service men have a thorough knowledge of methods used by manufacturers to speed production of good-condition mixed fertilizers. It will pay you to get their advice and assistance. This service is available to customers without charge. Simply contact Nitrogen Division, Allied Chemical, 40 Rector Street, New York 6, N. Y. Phone: HAnover 2-7300.

HERE'S THE BIG LINE OF Arcadian® NITROGEN SOLUTIONS

When you purchase your nitrogen requirements from Nitrogen Division, Allied Chemical, you have many different nitrogen solutions from which to select those best suited to your ammoniation methods and equipment. You are served by America's leading producer of the most complete line of nitrogen products on the market. You get formulation assistance and technical help on manufacturing problems from the Nitrogen Division technical service staff. You benefit from millions of tons of nitrogen experience and the enterprising research that originated and developed nitrogen solutions.

	CHEMICAL COMPOSITION %						PHYSICAL PROPERTIES		
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Neutralizing Ammonia Per Unit of Total N (lbs.)	Approx. Sp. Grav. at 60°F	Approx. Vap. Press. at 104°F per Sq. In. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
NITRANA®									
2	41.0	22.2	65.0	—	12.8	10.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	10.8	1.147	18	26
3	41.0	26.3	55.5	—	18.2	12.8	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	12.7	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	12.6	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	8.9	1.188	1	56
4M	41.0	19.0	72.5	—	8.5	9.2	1.194	7	61
6	49.0	34.0	60.0	—	6.0	13.9	1.052	48	-52
7	45.0	25.3	69.2	—	5.5	11.2	1.134	22	1
URANA®									
10	44.4	24.5	56.0	10.0	9.5	11.0	1.108	22	-15
11	41.0	19.0	58.0	11.0	12.0	9.2	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	11.7	1.081	25	- 7
13	49.0	33.0	45.1	13.0	8.9	13.5	1.033	51	-17
15	44.0	28.0	40.0	15.0	17.0	12.7	1.052	29	1
U-A-S®									
A	45.4	36.8	—	32.5	30.7	16.2	0.925	57	16
B	45.3	30.6	—	43.1	26.3	13.5	0.972	48	46
Anhydrous Ammonia	82.2	99.9	—	—	—	24.3	0.618	211	—

Other ARCADIAN® Nitrogen Products: UREA 45 • A-N-L® Nitrogen Fertilizer Ammonium Nitrate • American Nitrate of Soda • Sulphate of Ammonia

NITROGEN DIVISION Allied Chemical & Dye Corporation

MAIN OFFICE: 40 RECTOR STREET, NEW YORK 6, N. Y., PHONE HANOVER 2-7300

Hopewell, Va., P. O. Drawer 131 ..... Cedar 9-6301
Ironton, Ohio, P. O. Box 98 ..... Ironton 8-4366
Omaha 7, Neb., P. O. Box 166 ..... Bellevue 1464
Raleigh, N. C., 16 W. Martin St. ..... Temple 3-2801
Columbia 1, S. C., 1203 Gervais St. ..... Alpine 3-6676
Atlanta 3, Ga., 127 Peachtree St., N. E. Jackson 2-7805
Memphis 9, Tenn., 1929-B South 3rd St. Whitehall 8-2692
Columbia, Mo., P. O. Box 188 ..... Gibson 2-4040
Indianapolis 20, Ind., 6060 College Ave. Clifford 5-5443
Kalamazoo, Mich., P. O. Box 869 ..... Kalamazoo 5-8676
St. Paul 4, Minn., 45 N. Snelling Ave. Midway 5-9141
San Francisco 4, Cal., 235 Montgomery St. Yukon 2-6840

COLORADO AGR. CHEMICALS ASSN. 7TH ANNUAL MEETING

The seventh annual meeting of the Colorado Agricultural Chemicals Association was held January 30 and 31 at the Cosmopolitan Hotel, Denver.

Jack Dreessen, herbicide specialist, National Agricultural Chemicals Association, spoke of the industry's contributions to agriculture during the past 17 years, and James Patton, president of the National Farmers Union, discussed economic problems of the farmer.

Named as officers were Frank J. Randall, The C. D. Smith Co., president; Leonard Everett, Woodbury Chemical Co., vice president; D. E. Garrison, Balcomb Industries, secretary-treasurer. Directors: Harold Mankoff, Mannco Chemical Co., and E. H. Macomber, American Cyanamid Co.

MATERIALS HANDLING CONF. SCHEDULED FOR JUNE 9-12

The urgent need for cost reduction in the nation's factories and distribution systems will receive considerable attention at the Materials Handling Conference in Cleveland's Public Auditorium, June 9–12, reports James N. Landis, president of the American Society of Mechanical Engineers which is sponsor of the conference.

It will be held concurrently with the National Materials Handling Exposition, produced by Clapp & Poliak, New York exposition management firm.

A session devoted to "New Developments in Materials Handling Systems" will include papers on warehousing, design of new handling systems, pneumatic materials handling systems, research and development for new equipment, and end-loading.

Papers to be read on equipment maintenance will cover mobile and light equipment, heavy cranes and hoists and stationary equipment. In the session on "Scientific Management in Materials Handling," topics include "Operations Research in Materials Handling," "Scheduling and Planning in the Operation of Materials Handling Systems" and "Progress in Performance Standards for Materials Handling Equipment."

MCA TO HOLD 86TH ANNUAL MEETING JUNE 12-14

More than 700 chemical executives are expected to attend the 86th annual meeting of the Manufacturing Chemists' Association, the group reports. The meeting will be held June 12–14 at The Greenbrier in White Sulphur Springs, W. Va.

S. B. Penick, Jr., president of S. B. Penick & Co., is program chairman.

FERTILIZER SAFETY EXEC. COMMITTEE WINTER MEETING

On January 30, the executive committee of the Fertilizer Section, National Safety Council, met in Nashville, Tenn. for its winter session.

It was pointed out that the development of safe techniques for new and old processes often result in greater industrial efficiency. Means of interesting management, training supervisory personnel and reaching the worker were discussed.

Progress was reported on literature and standards being prepared to improve the use of equipment in the fertilizer industry.

The committee viewed a color-sound film, "Knowing's Not Enough" and decided to show it at the council's annual fall fertilizer industry safety meeting in Chicago October 20 and 21.

The air pollution problem is being studied by the engineering committee headed by A. B. Pettit of W. R. Grace & Co., and insurance rates and fire losses in the industry are being examined by the insurance and legislative committee, of which E. O. Burroughs, Jr., F. S. Royster Guano Co., is chairman.

COLLEGE-INDUSTRY FERTILIZER ADVISORY COUNCIL FORMED IN IOWA

Formation of an advisory council to discuss "problems of common interest to the college and fertilizer industry" has been announced by W. H. Pierre, head of the agronomy department at Iowa State College.

Known as the "Iowa Fertilizer Council," the organization is composed of representatives of various segments of the fertilizer industry, the Iowa Department of Agriculture and Iowa State College.

Objectives will include encouragement of fertilizer research. The group will aid in publicizing research findings and promoting educational programs in soil fertility and soil testing. Another goal will be better understanding of Iowa fertilizer laws, and consideration of fertilizer legislation that would be in the best interests of Iowa farmers.

Council members held their first formal meeting at the college on March 4. They reviewed research and educational programs of the agronomy department.

Chairman is John Porter, Iowa Plant Food Co., and secretary is John Pesek of the Iowa State College agronomy department. Council members include A. R. Miles, Iowa Dept. of Agriculture; Jerry Mitchell, National Fertilizer Co.; Coy Babb, Spencer Chemical Co.; John Strauss, Ris-Van, Inc.; George Kramer, Farmers Cooperative Elevator; George Linton, American Agricultural Chemical Co.; W. H. Pierre, E. R. Duncan and J. A. Stritzel, agronomy department, Iowa State College; Zenas Beers, National Plant Food Institute; G. A. Wickstrom, American Potash Institute and Bill

Guithess, Bradley and Baker.

Each of the following Iowa fertilizer industry groups has one representative on the council: liquid, blending, mixture ammoniators (independent, national and cooperative groups), nitrogen, phosphate, and potash, as well as the National Plant Food Institute.

NPFI EDITORIAL ASSISTANT

Jerry B. Davis recently was appointed to the staff of the National Plant Food Institute as editorial assistant. He goes to the institute from the Agricultural Research Service, USDA, where he was an information specialist.

Davis

He will be responsible for production and distribution of NPFI motion pictures and, in addition, will assist in editing institute publications.

CALENDAR

April 11-19. International Horticultural Congress, Nice, France.

April 13-15. California Fertilizer Conf. State Polytechnic College, San Luis Obispo.

April 13-18. National meeting, American Chemical Society, San Francisco, Calif.

April 22. Spring meeting, Western Agricultural Chemicals Assn., Hotel Biltmore, Los Angeles, Calif.

April 22-24. Council for Agricultural & Chemurgic Research annual chemurgic conference, Congress Hotel, Chicago.

April 30. Precautionary Labeling Conf., Shamrock Hotel, Houston, Tex. Sponsored by the Manufacturing Chemists' Assn.

May 19-21. Chemical Specialties Mfrs. Assn. midyear meeting, Netherland Plaza Hotel, Cincinnati, Ohio.

May 22-23. First annual meeting, Soil Science Society of North Carolina, Williams Hall, N. C. State College, Raleigh.

May 25-29. Air Pollution Control Assn. annual meeting, Sheraton Hotel, Philadelphia.

June 9-11. Association of Southern Feed and Fertilizer Control Officials, Heart of Atlanta Hotel, Atlanta, Ga.

June 12. Fertilizer Safety Executive Comm., Hotel Roanoke, Roanoke, Va.

June 12-14. Manufacturing Chemists' Assn. annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 15-18. National Plant Food Institute, Greenbrier Hotel, White Sulphur Springs, W. Va.

June 25-27. Pacific Branch, Entomological Society of America, San Diego, Calif.

July 8-10. Pacific N. W. Fertilizer Conference, Pocatello, Idaho.

July 18-19. Southwest Fertilizer Conf. and Grade Hearing, Buccaneer Hotel, Galveston, Tex.

Oct. 14-15. Western Agricultural Chemicals Assn. annual meeting, Villa Hotel, San Mateo, Calif.

Oct. 22-24. Pacific N. W. Plant Food Assn. annual meeting, Gearhart, Ore.

Oct. 28-29. Northwest Garden Supply Trade Show, Masonic Temple, Portland, Ore.

Oct. 29-31. 25th annual meeting National Agricultural Chemicals Assn., Bon Air Hotel, Augusta, Ga.

FROM THE WORLD'S STOCKPILES—TO YOUR PLANT...

Woodward & Dickerson Inc. serves you

with an 80 year reputation for reliability in quality, price and delivery.

POTASH

MURIATE

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BDSA REPORTS ON FARM CHEMICALS OUTLOOK

The outlook for fertilizers is viewed with more optimism by the trade this year than last year, according to the "Chemical and Rubber Industry Report" issued by the Business and Defense Services Administration.

Although demand during the early part of 1956–57 was disappointing, shipments in the late spring were heavier than anticipated, says BDSA. As the result of reduced post-season carryovers in June, production during the summer and fall exceeded that for the corresponding period of the preceding year, and BDSA said that the higher level of output may well carry over into 1958.

The late-buying evidenced last season may be even more pronounced this spring, BDSA forecast.

Passing of soil bank legislation has not had the adverse effect on pesticide consumption that was first feared, according to the report, and increases in nonfarm uses and exports have helped to keep sales strong.

It is impossible to make a realistic prediction for the pesticide industry in 1958 because degree of infestation is unknown, BDSA continued, but indications are that inventories of formulated materials are comparable to those at the end of 1956 and stocks of unformulated pesticides are higher, so that production may be down in early 1958.

PHOSPHATE ROCK REPORT ISSUED BY MINES BUREAU

The first of two new Bureau of Mines information circulars regarding phosphate rock has been released by the Department of the Interior. General information on mining, beneficiating and marketing the material is included in the report. Another publication, now being prepared, will concern processing and utilization of phosphate rock.

A copy of Report I.C.7814, "Phosphate Rock (In Two Parts) 1. Mining, Beneficiation and Marketing," by E. Robert Ruhlman, can be obtained by writing the Publications-Distribution Section, Bureau of Mines, 4800 Forbes St., Pittsburgh 13, Pa.

FERTILIZER APPLICATION BY AIRPLANE TRIED IN VA.

According to a recent Tennessee Valley Authority report, fertilizer is being applied by airplane in Tazewell County, southwest Virginia, on an experimental basis. The experiment was planned by the extension service in cooperation with other agricultural agencies in the area.

High analysis, mixed fertilizer, such as 0-40-20, made with TVA metaphosphate, is used in the experiment. It is hoped that the use of such high analysis materials will make this method of application economical.

Fifty tons have thus far been applied. It is planned to use a total of 2,000 tons in the experiment. Several other Tennessee Valley counties in southwest Virginia are making plans for similar demonstrations.

Spreading fertilizer by plane was first tried in the Valley earlier in the year on a limited scale in Washington County, Virginia. In that initial test a single wing light plane was equipped with a hopper mounted behind the pilot. At the bottom a fan type spreader was mounted on the underside of the hopper with the opening control in the cockpit of the plane. This was opened at the approach to the field and the fertilizer drifted out. The pilot flew about 20 feet above the ground. Because of an unfavorable wind the pilot carried only 300 pounds of fertilizer. It is believed, says TVA, that 900 pounds is a minimum that can be carried to make the venture feasible from an economic viewpoint, and then only if the fertilizer used is of high analysis.

1958 INSECTICIDE RECOMMENDATIONS

Agriculture Handbook No. 120, "Insecticide Recommendations of the Entomology Research Division for the Control of Insects Attacking Crops and Livestock, 1958 Season," is now for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Price is 55 cents. In the tables for crops and insects is information on tolerances, formulations, dosages, application dates, restrictions, and references. The foreward includes this important advice: "Since the status of many chemicals is changing rapidly and new materials or new uses for older materials are being recommended, we suggest that you keep in touch with the Department of Agriculture, your land-grant college, or manufacturers of specific products for up-to-date information."

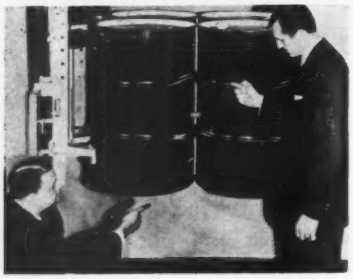
NEW BOOKLETS ISSUED BY U. S. DEPT. OF COMMERCE

Two booklets of interest to management have been issued by the U.S. Dept. of Commerce. One, a summary of activities, services and publications of the Federal Government which are useful to business in distribution research, was prepared as a supplement to a discussion of the subject presented at the President's Conference on Technical and Distribution Research for the Benefit of Small Business, recently held in Washington. Entitled "Activities and Services of the Federal Government in Distribution Research," it may be purchased for 40 cents from the Government Printing Office, Washington 25.

The second booklet, PB 131300 "Industry Planning for the Continuity of Production in the Event of Enemy Attack," may be ordered from OTS, U.S. Dept. of Commerce, Washington 25. The 36 page booklet costs 50 cents.

FARM CHEMICALS — Equipment & Supplies

NEW DRUM DEVELOPED



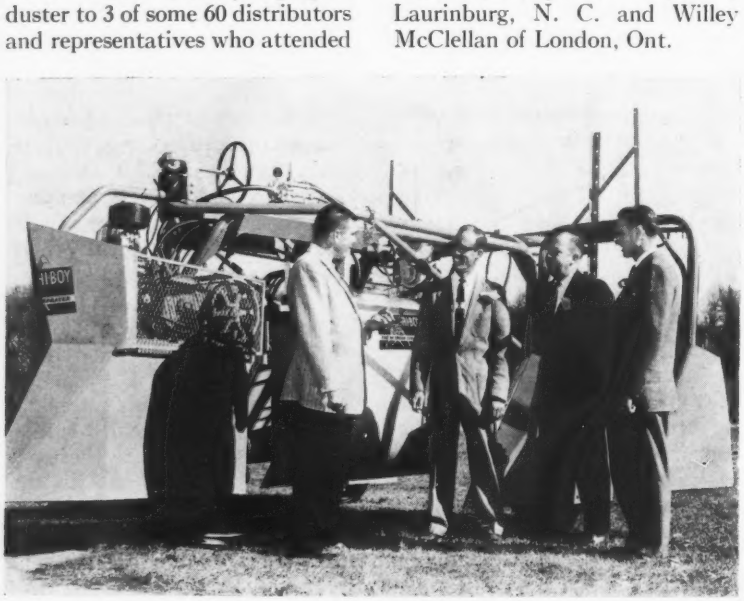
Ray E. Frase, manager of the special products division for Signode Steel Strapping Co., and Vern I. McCarthy, Jr., Vulcan vice president, point to the drum's specially designed hoops.

A 55 gallon steel drum, which interlocks with adjacent drums when any number are packed closely together, has been developed by the Signode Steel Strapping Co. in conjunction with Vulcan Containers, Inc., Bellwood, Ill., which will manufacture and market the new Uni-Drum.

The drum, said to save space and reduce handling and shipping costs, features specially designed rolling hoops. These are slightly offset—alternately raised and lowered—on opposite sides of the drum. A group of the new drums can be handled by a standard lift truck without the necessity of costly wood pallets. As the drums contact each other at their six strongest points, denting and deformation is reduced. The drums roll only on the hoops and, according to Vulcan, roll straight and can be guided easily, can be reconditioned, and can be readily intermixed with standard drums if necessary.

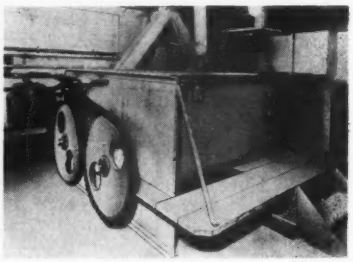
HAHN, INC. HOLDS SPRAYER SCHOOL

Gil Betulius (left), sales manager for the farm sprayer div. of Hahn, Inc. talks about the 1958 model Hahn Hi-Boy sprayer-duster to 3 of some 60 distributors and representatives who attended Hahn's annual sprayer school held recently in Evansville. Others shown are Robert Reimer, Bakersfield, Calif.; James Gibson of Laurinburg, N. C. and Willey McClellan of London, Ont.



NEW TWIN MIXER

Rapids Machinery Co., manufacturer of horizontal mixing equipment, has introduced the new Marion Twin Mixer for heavy duty mixing up to 3 tons capacity on either dry or semi-wet materials. A 4 ton capacity model is also available for dry mixing. The Marion Twin Mixer has twin arms and blades, and features a



four-way mixing action that tumbles the mix from ends to center and also from side to side. The mixer also features a heavy roller chain drive powered by a motor and heavy duty gear reduction unit.

A brochure describing one of these installations and further description of the mixer may be obtained by

CIRCLING 102 ON SERVICE CARD

PLASTIC WINDOWS ADOPTED TO RESIST EXTREME HEAT

Plastic windows made of one of its own products have solved Hooker Electrochemical Co's. problem of finding a window that will remain undamaged when situated over a white hot 2662° molten slag pool. In its operations at its Oldbury phosphorus electric furnace building at Niagara Falls, N. Y., the company had first tried high-strength window glass, but the exceptionally high temperature of the molten phosphorus slag, which pours periodically from the building whenever a furnace is tapped, made the glass fracture at the first tapping. Shutters of sheet tin have been used for many years but they were not satisfactory as open shutters chilled the room on cold winter days and the interior was gloomy when using the entirely artificial light required much of the time.

A Hooker engineer suggested the use of the company's Hetron

FEEDING AND FERTILIZER MATERIALS

(SINCE 1898)

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SAMUEL D. KEIM

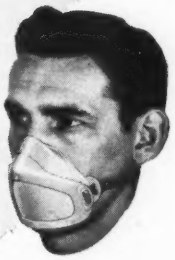
1343 ARCH STREET

PHILADELPHIA 7, PA.

the exclusive

FLEX-A-FOAM DUST MASK

(no other product like it . . . anywhere)



Here's everything that management and worker alike could possibly want in a dust respirator!

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92, a fire-retardant, fiber glass-reinforced polyester resin, offered by plastic fabricators in light-transmitting panel form. Accordingly, ⅛"-thick, green-tinted Hetron panels, produced by Resolite Corp. were inserted for testing in various locations. A check revealed perfect performance at each location. The panels improve working conditions by transmitting shadowless, cool-looking light without glare within the furnace room and on the stairway. They have, already far outlasted the glass panels once used, Hooker reports.

FOR SALE: Screens, Robbin 3 x 10 single deck; Tyler 3 x 5 double deck. Beaird Rotary Dryers 4 x 30; Rotary Steam Tube Dryers 4' x 30, 6 x 45. Dewatering Presses: Louisville 8-roll 36", Davenport #2A, 1A. Mikro Pulverizer #2DH. Ribbon Mixers: 336 & 50 cu. ft. Steel & Stainless Steel Tanks: 400 gal. to 9500 gal. SEND US YOUR INQUIRIES. PERRY, 1430 N. 6th St., Phila. 22, Pa.

SCHELM SPRAYER TRAILER

Schelm Brothers, Inc. is now marketing a sprayer trailer which it says will handle all non-pressure liquid fertilizers, weed, insect and crop disease chemicals.

It is available with either a 200 or 300 gallon aluminum tank, nylon roller PTO pump, 15, 17 or 19 nozzle stainless spray boom, valves and control equipment.

For information on this SS-NPY sprayer trailer and other units in the Schelm line,

CIRCLE 103 ON SERVICE CARD

SOILTEST INTRODUCES NEW BATCH OVENS

Soiltest, Inc., has introduced electric batch ovens which feature the new Power-O-Matic control which is said to automatically proportion minimum wattage input in relation to the operating temperature and work load. Oven sizes range from the small model with a capacity of 16 cubic feet to the large model with a capacity of 96 cubic feet. The ovens can be operated up to 600°F. For further details on the ovens and on Soiltest's box type furnaces for industrial and laboratory use,

CIRCLE 104 ON SERVICE CARD

IMC Opens 'Unique' Mineralogical Lab

A RESEARCH laboratory designed to "capitalize to the fullest on today's rich new opportunities in minerals" has been put into operation by International Minerals & Chemical Corporation at its Experimental Research Station in Mulberry, Fla.

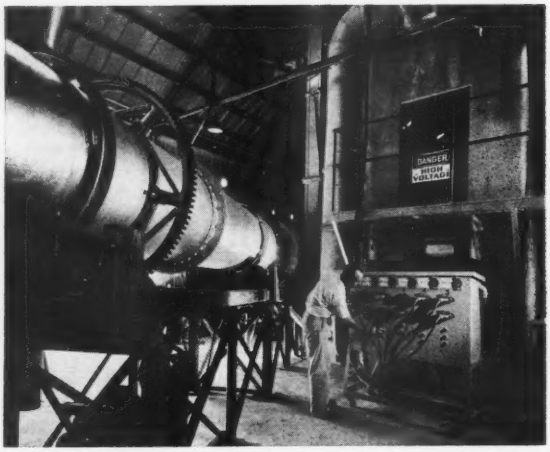
Dr. I. M. LeBaron, IMC research vice president, said at the opening that the new mineralogical lab, unique in the mining industry, would allow full-range mineral investigations, from studying composition of new-found ores to checking out the economic soundness of mining and marketing them.

"This new facility will be used to discover, develop, and keep on tap information management must have for the quick, correct decisions required to keep up with today's opportunities and markets," Dr. LeBaron said.

The new laboratory group at Mulberry brings to 74 the total of scientists and technicians on the IMC research staff there. Elliott Northcott, manager of the station, now the largest industrial research unit in the state, says the complete staff skills include mineralogy, metallurgy, mineral processing, inorganic chemistry and chemical engineering. Eight Ph.D. and 11 masters degrees are represented on the staff.

Equipment for the new laboratory includes facilities for differential thermal analysis, X-ray diffraction, spectography and X-ray spectography, and high-powered microscopic studies.

The Florida station conducts about 50 per cent of the company's total research program, some of which was shifted from the main research laboratory at Skokie, near Chicago. The Florida station handles inorganic chemistry, chemical processing and engineering, minerals beneficiation, and mineralogy; Skokie handles organic, biological, agronomy and food products research.



Pilot plant operations are used to check theoretical findings of the new mineralogical laboratory established by International Minerals & Chemical Corporation at its Research Experiment Station near Mulberry, Fla. Rotary kiln, left, and electrostatic tower, in background, are controlled from single panel shown, along with various other equipment in the same building. Pilot plants run continuously during tests.

IMC expects the mineralogical laboratory to make a natural tie-in with the Mining and Exploration Department established just a year ago to uncover promising new ores, and these can now be quickly analyzed and evaluated at Mulberry.

The Mulberry station has 15 pilot plant and sub-pilot plant facilities, flexible enough to permit duplicating most of the company's commercial production facilities.

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USDA OK'S MYLONE USE ON VEGETABLE SEED BEDS

Mylone soil fumigant has been granted federal label acceptance by USDA for preplanting use on seed beds of certain vegetables, according to its manufacturer, Union Carbide Chemicals Co., Div. of Union Carbide Corp.

Formerly it was available for use on vegetable seed beds only on an experimental basis. Now Union Carbide says it is commercially available to growers for pre-planting treatment of tomato, pepper, cabbage, eggplant and lettuce seed beds.

ROBERTS CHEMICALS REPORTS HERBISAN 5 REGISTRATION

Herbisan 5, Roberts Chemicals, Inc. trademark for a formulation of bis ethyl xanthogen, has been registered by USDA for pre-emergent weed control in onions, according to a recent announcement.

Work done by Dr. Ruble Langston at Purdue University using radioactive tracer techniques showed no residue in onions when the product was used according to directions, Roberts reports.

WIDESPREAD USAGE PREDICTED FOR DELNAV

Hercules Powder Co. reports its Delnav miticide is expected to find widespread usage this year on cotton, citrus and ornamentals. Label approval has been granted for its use as a miticide on cotton, certain ornamentals and nonbearing citrus.

Chemically, Delnav is described as 2, 3-p-dioxanedithiol-bis-(0, 0-diethyl-phosphorodithioate) and related compounds, and is available as an emulsion concentrate. It is compatible with all commonly used insecticides and fungicides, the manufacturer states.

More specific data can be obtained by

CIRCLING 105 ON SERVICE CARD

DOW TO SELL NEW FLY CONTROL SPRAY

Plans to market a new fly control chemical this spring have been announced by Dow Chemical Co. Known as Korlan, the new material is said to combine good residual properties with very low toxicity to warm-blooded animals.

Dow reports that Korlan is recommended for use in dairy barns, poultry houses, other animal shelters, general farm buildings and in refuse areas where flies breed and congregate.

The new compound, Dow says, effectively controls house flies in both adult and larval stages, and under normal conditions, control will last from four to six weeks.

The active ingredient is 0,0-dimethyl 0-2, 4, 5-trichlorophenyl phosphorothioate. Twenty-five per cent wettable powder and 12 per cent emulsifiable formulations will be available.

TRITHION DATA AVAILABLE FROM STAUFFER CHEMICAL

Trithion Stauffer Chemical Co.'s new organic phosphate insecticide, is described in a brochure just published. The important characteristics of the insecticide, as revealed by laboratory and field tests during the past several years, are detailed.

Stauffer describes the product as a "non-systemic, long-residual compound which is an efficient miticide."

The brochure indicates which insects Trithion will control, the official tolerances so far established, residual activity and toxicology. The four formulations available are described, and a table lists recommended dosages.

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Production — December, 1957

Compiled from Government Sources

Chemical	Unit	December 1957	December 1956	November 1957
Ammonia, synth. (anhydrous)	s. tons	317,199	290,400	310,535
Ammonia, byproduct liquor (NH_3 content)	s. tons	1,080	1,606	1,176
Ammonium nitrate, fertilizer grade	s. tons	213,468	173,611	204,180
Ammonium sulfate				
synthetic (technical)	s. tons	87,139	72,319	84,385
byproduct	s. tons	62,644	80,887	68,560
BHC (Hexachlorocyclohexane)	pounds	———	———	———
gamma content	pounds	———	———	———
Calcium arsenate (commercial)	s. tons	———	———	———
Copper sulfate (gross)	s. tons	4,084	———	4,568
DDT	pounds	8,869,530	11,200,942	9,017,326
2,4-D Acid	pounds	3,049,179	3,089,429	2,531,778
esters and salts	pounds	2,189,081	———	2,126,606
esters and salts (acid equiv.)	pounds	1,665,846	———	1,729,104
Lead arsenate (acid and basic)	s. tons	765	448	[2]
Phosphoric acid (50% H_3PO_4)	s. tons	341,132	298,698	356,873
Sulfur, native (Frasch)	l. tons	471,630	534,088	445,908
recovered[1]	l. tons	48,098	43,750	41,882
Sulfuric acid, gross (100% H_2SO_4)[3]	s. tons	1,291,551	1,376,219	1,315,298
Superphosphate (100% APA)	s. tons	210,792	207,253	205,821
normal and enriched (100% APA)	s. tons	117,094	126,829[4]	113,624
concentrated (100% APA)	s. tons	73,478	61,115	73,598
other phos. fertilizers (incl. wet-base goods)	s. tons	20,220	18,218[5]	18,599
2,4,5-T Acid	pounds	307,220	522,729	414,595
Urea (total primary production)	pounds	99,102,017	86,571,820	93,566,480

*Revised. [1]Recovered sulfur of a parity of 97 per cent or greater. [2]Withheld to avoid disclosing figures for individual establishments. [3]Includes data for government owned privately operated plants. [4]Excludes enriched superphosphate, quantities of which if added to normal superphosphate would account for less than 2 per cent of the total. [5]Excludes wet-base goods, quantities of which if added to other phosphatic fertilizers would account for less than 6 per cent of the total.

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CHEMICALS

Patent Reviews

FC

By Dr. Melvin Nord

FERTILIZERS

U. S. 2,817,155, issued Dec. 24, 1957 to George R. Gilliam and Joseph A. Smith, assigned to Allied Chemical & Dye Corp., describes a process for evaporating ammoniated nitrophosphate slurries prepared by acidulating phosphate rock with nitric acid alone or together with sulfuric or phosphoric acid, followed by ammoniation of the acidulated material.

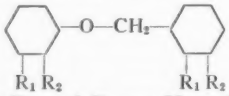
The problems solved are: reduction of the loss of nitrogen during evaporation, and prevention of scale formation.

A film type of evaporation is used to reduce the moisture content to about 6-10 per cent water. Further drying to less than 2 per cent moisture can then be readily accomplished in a large-size rotary drum drier.

U. S. 2,817,156, assigned to the same company by George R. Gilliam, relates to the same subject matter.

PESTICIDES

U. S. 2,817,622, issued Dec. 24, 1957 to Albert Obladen and Martin Deutsch, assigned to Lehn & Fink Products Corp., discloses the use as joint insecticides and bactericides of mixtures of chlorinated phenyl-benzyl ethers of the general formula



where R_1 R_2 and R_2 are H or Cl (at least one being Cl).

U. S. 2,818,365, issued Dec. 31, 1957 to George F. Deebel and Philip H. Santmyer, assigned to Monsanto Chemical Co., discloses the use of thioalkylamines for destroying nematodes. The compounds have the formula

$$R—S—Y—NH_2$$

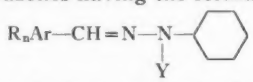
where R is a hydrocarbon radical free of non-benzenoid unsaturation, containing 1–18 carbon atoms, and Y is an alkylene radical containing 1–5 carbon atoms.

U. S. 2,818,366, issued Dec. 31, 1957 to Gail H. Birum, assigned to Monsanto Chemical Co., discloses the use of haloalkyl phosphonic dihalides for controlling nematodes. The compounds have the formula

$$X—R—POX_2$$

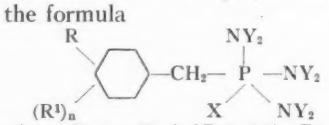
where X is Cl or Br, and R is an alkylene radical containing 1–3 carbon atoms.

U. S. 2,818,367, issued Dec. 31, 1957 to Ernest G. Jaworski and Van R. Gaertner, assigned to Monsanto Chemical Co., discloses a method of inhibiting cereal plant rust with phenylhydrazones having the formula



where Ar is an aromatic hydrocarbon nucleus (C 6–12); n is 1 or 2; R is H, halogen, nitro, sulfonate, cyano, hydroxyl, alkyl (C 1–12); alkoxy (C 1–12), or N-alkyl substituted amino (C 1–5 in the alkyl); and Y is H or alkyl (C 1–12).

U. S. 2,818,368, issued Dec. 31, 1957 to Milton Kosmin and assigned to Monsanto Chemical Co., disclosed the use of phosphonium halides for controlling nematodes. The compounds have the formula



where R is alkyl (C 8–18), R^1 is H or alkyl (C 1–4), n is 1 or 2, Y is alkyl (C 1–4), and X is halogen.

U. S. 2,818,327, issued Dec. 31, 1957 to George Knowles, describes a method of weed control by the prevention of viable seed production.

Thus, to prevent the production of viable wild oat seeds in a barley crop, maleic hydrazide is applied to the crop immediately after the barley seed have entered the "dough stage" of growth. About 1 pound per acre is used.

U. S. 2,811,432, issued October 29, 1957 to Harold E. Bruner, assigned to Monsanto Chemical Co., discloses a herbicidal composition containing an alkali metal salt of pentachlorophenol as the toxic agent.

Sodium pentachlorophenate has long been recognized as having potent herbicidal activity, but possesses the very serious shortcoming of being highly irritating and unpleasant to handle in the dry state. All of the commercial forms, whether powder, pellets, or briquettes, contain noticeable quantities of finely divided dust which is irritating to the mucous membranes of the eyes, nose and throat. It is also irritating to the skin of most persons.

These difficulties are overcome in the present invention, by using a mixture of an alkali metal pentachlorophenate with an alkali metal xanthate. The dosage used and the weed control obtained are essentially equivalent to that obtained with an equivalent weight of pentachlorophenate.

SOIL CONDITIONING

U. S. 2,816,083, issued Dec. 10, 1957 to Newton H. Shearer, Jr., and assigned to Eastman Kodak Co., describes a new soil conditioning agent, consisting of an alkaline salt of a copolymer of 70–95 per cent by weight of N-isopropyacrylamide and 5–30 per cent by weight of acrylic or maleic acid.

The inventor says that these salts have been found to be more than four times as effective as known synthetic conditioning agents commercially available in increasing the tilth and hydraulic stability of surface soils containing substantial amounts of clay.

U. S. 2,816,397, issued Dec. 17, 1957 to Wilhelm Becker, Fritz Schmidt, and Otto Bayer, assigned to Farbenfabriken Bayer A. G., provides a method of conditioning soil by incorporating in the soil aluminum alkoxide, titanium alkoxide, or zirconium alkoxide. The amount used is preferably 0.05 to 0.5 per cent by weight of the soil. These substances are readily converted in the soil to gel-forming hydroxides.

CONCENTRATION OF PHOSPHATIC MATERIAL

U. S. 2,815,859, issued Dec. 10, 1957 to Clinton A. Hollingsworth and assigned to Smith-Douglass Co., Inc., describes a froth flotation process for the separation of silica from phosphate rock.

The figure is a diagrammatic flow sheet which illustrates the process. The feed to the flotation plant is the undersize or fines from the phosphate washer plant having a particle size normally minus 14 mesh.

The BPL of this feed will vary from 20 to 50 per cent, and usually the silica content (insol.) exceeds the phosphate content (BPL). The washer undersize is first dewatered in a large hydroseparator 5, the overflow of which is discharged to waste, and the underflow pulp is pumped to storage bins 6. From the storage bins, the pulp is pumped, as required, to a surge bin 7, the overflow of which goes to a relatively small hydroseparator 8. The underflow of the surge bin goes to a rake classifier 9, the overflow of which goes to the hydroseparator 8. The rake product is delivered to a deslimer 10, the overflow of which is returned to the large hydroseparator 5. The settled underflow of the hydroseparator 8 is pumped to the deslimer 10.

The deslimer pulp is delivered to two series (11 and 12) of rougher flotation cells, arranged in tandem, that is the phosphate underflow of the cells 11 is the feed of the cells 12. The silica froths of both cells 11 and 12 are combined and fed to froth-cleaning flotation cells 13. The silica froth (tails) of the cells 13 is discharged to waste, and the underflow of these cells is delivered to a catchall sump or middlings tank 14.

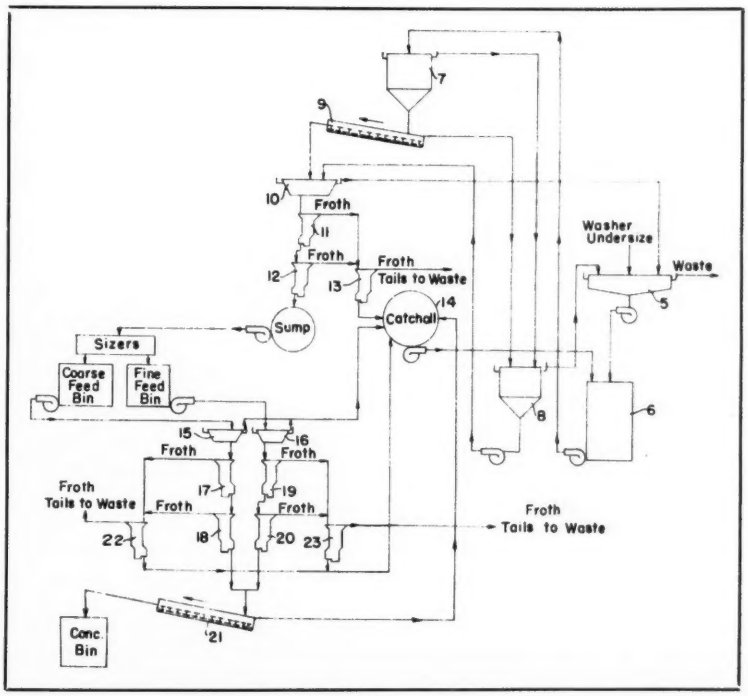
The underflow of the cells 12 (rougher phosphate concentrate) is delivered to a storage sump, from which it is pumped, as required, to particle sizers in which products of two different particle sizes are produced, namely coarse and fine, as feed for the flotation cleaner cells.

The coarse and fine feeds are delivered to separate rinsers 15 and 16, respectively, in the nature of deslimers. The underflow of the coarse feed rinser 15 is delivered to two series (17 and 18) of flotation cells (cleaners) arranged in tandem. The underflow of the fine feed rinser 16 is delivered to two series (19 and 20) of flotation cells (cleaners) arranged in tandem. The underflows of the cells 18 and 20 (final cleaner concentrate) are combined and delivered to a dewatering screw classifier 21, and the dewatered phosphate concentrate is discharged to storage bins. The screw classifier overflow is delivered to the middlings tank 14.

The silica froths of the cells 17 and 18 are combined and retreated in a froth cleaning cell 22, while the silica froths of the cells 19 and 20 are combined and retreated in a froth cleaning cell 23. The silica froths (tails) of the cells 22 and 23 are discharged to waste, and the overflow of these cells is conveyed to the middlings tank 14. Middlings from the tank 14 are pumped to the storage bins 6 for the dewatered washer undersize at the head of the flotation plant.

The patent describes the flotation cells in detail.

According to the inventor all silica does not appear to respond in the same way to flotation treatment. For example, one type of reagent floats part of the silica best while another type of reagent floats the remaining part of the silica best. By floating in two steps of silica flotation, advantage can be taken of this phenomenon. Thus, a different type of cationic collector may be used in the second or cleaner step of the invention than used in the first or rougher step, or perhaps different amounts of the same cationic collector in the two steps of flotation will give the optimum results. In the present preferred practice of the invention, the first step of flotation of unsized feed (in cells 11, 12 and 13) is carried out with the reaction product of sulfuric acid and a mixture of a fatty amine and liquid hydrocarbon. The second step of flotation of sized feed is then carried out with an unmodified amine (i. e. one not reacted upon by sulfuric acid) such as "Armoflote S" or other suitable fatty amine flotation reagent or other type of cationic collecting flotation agent, usually in conjunction with a suitable frothing agent such as pine oil, crude turpentine or one of the so-called alcohol frothers (e. g. diisobutyl carbinol).



PEST REPORTS

Presented in cooperation with the Economic Insect Survey Section, Plant Pest Control Branch, Agricultural Research Service, USDA.

TRUCK CROP PESTS CONTINUE TO BE LIGHT

In general truck crop pests during February and early March were relatively light. The imported cabbageworm and the cabbage looper were reported active in Los Angeles county, California. One field of cabbage in the San Fernando Valley, Los Angeles county had more than 75 per cent of the heads unmarketable. The artichoke plume moth was damaging artichokes in northern Santa Barbara county, California. Other truck crop pests causing damage in California were the green peach aphid on spinach, the sugar beet wireworm on onion and the vegetable weevil in Los Angeles county and the potato psyllid in San Diego county.

The cabbage aphid was reported, during February, to be light to moderate on cabbage in Colquitt, Thomas and Lowndes counties, Georgia and moderate on collards in Cook county. Onion thrips were light to moderate on onions in Tattnall county, Georgia.

FOXGLOVE APHID NUMBERS MAY INCREASE IN MAINE

A survey was conducted in northeastern Maine during the fall of 1957 to determine the potential population of the foxglove aphid, one of the principal potato-infesting species in the area. The survey showed about twice the population of foxglove aphids on hawkweed as during the previous fall. This, with more favorable host plants, resulted in the finding during late November 1957 of about five times as many aphid eggs as during November 1956. Indications at the present time are that with the apparent general distribution of eggs and with favorable weather conditions the population of foxglove aphid developing on hawkweed for potential migration to potato fields will be well above that of a year ago.

SLIGHT INCREASE IN CEREAL, FORAGE INSECTS

It is only natural that by late February or early March cereal and forage insect activity would be on the increase. However, to date this increase had been gradual with no serious infestation reported. In Kingfisher county, Oklahoma, greenbug counts in some areas averaged 20–30 per linear foot of wheat row. Light, scattered damage was evident in some spots and a few fields were sprayed. Light infestations of greenbugs were found in Curry and Quay counties, New Mexico, and Rockwall county, Texas. Very light populations were reported to be present in some winter wheat fields of southwestern Kansas.

The spotted alfalfa aphid continues light where found and in no case have widespread infestations been reported. In New Mexico light infestations were general throughout most fields checked in Dona Ana, Eddy, Luna and Hidalgo counties but no apparent damage was evident. Light infestations were reported from Rockwall County, Texas. The same was true for the Stillwater, Oklahoma, area and numbers were rare to very light in the southeastern and extreme eastern counties of the state.

Adult pea leaf weevil activity was noted in areas of Oregon during periods of warm weather in February.

Indications are that considerable economic damage may be expected in the Willamette Valley during 1958.

BEET LEAFHOPPER SURVEY IN WESTERN STATES

The initial phase of the 1958 annual survey to determine the expected beet leafhopper spring movement from breeding grounds in the western states was conducted during January and February by the Entomology Research Division, U. S. Department of Agriculture and cooperating federal and state agencies. The beet leafhopper, a more or less desert insect, moves from the desert breeding area to succulent crops such as sugar beets, tomatoes, beans, flax, spinach, peppers and cantaloups, as well as some ornamentals. The damage to the mentioned crops is caused by the curly top virus carried by the insect.

The beet leafhopper spring movement from the southern desert breeding grounds to the cultivated districts of southern and south central Utah is expected to be heavy. Host plants were found at 70 per cent of the stops in the breeding grounds in 1958 in comparison with host plants at 14 per cent of the stops in 1957 and 3 per cent in 1956. The average leafhopper population was 1.0 per square foot of weed host.

Movement of the leafhopper to northern Utah and eastern Colorado is expected to be moderate to heavy. Late January observation showed the overwintering population to be above average and host plants favorable.

During February a beet leafhopper control program was conducted in the desert breeding area of Imperial county, California to prevent migration of the pest to crops. By the latter part of the month the program was nearly complete with 1,900 acres of breeding area sprayed by ground equipment and 19,800 acres by air. ▲

Fertilizer Materials Market

FC

New York

March 20, 1958

Sulfate of Ammonia. With a reduced production rate in the steel industry and a heavy export demand, a rather tight situation is looked for during the next 60 days.

Ammonium Nitrate. A better demand for ammonium nitrate is looked for shortly as shipments in most cases are still lagging. No price changes were noted.

Urea. A steady demand was reported for urea both from the fertilizer and chemical trade.

Nitrogenous Tankage. A very heavy demand was noted for nitrogenous tankage from various parts of the country and most producers were sold out for this season. Prices range from $3.25 to $4 per unit of ammonia ($3.95 to $4.86 per unit N) f.o.b. shipping points.

Castor Pomace. A steady demand was noted for this material with production light. Some imported material is available at Southern points.

Organics. Because of the increased buying by the feed trade, certain organic fertilizer materials have advanced sharply in price in the last few weeks and supplies of certain animal by-products are scarce and hard to find. Blood sold at $6 per unit of ammonia ($7.29 per unit N) f.o.b. Eastern shipping points and tankage sold at $6.50 to $7 per unit of ammonia ($7.90 to $8.51 per unit N). These are the highest prices in several years for some of these products. Soybean meal was hard to locate for immediate shipment with last sales on the basis of $56 per ton in bulk, f.o.b. Decatur, Ill. Cottonseed meal sold at $63 per ton f.o.b. Memphis, in bags, and linseed meal was sharply higher.

Fish Meal. Increased demand, mostly from the feed trade, firmed this material in price with last sales on the basis of $135 per ton, f.o.b. fish factories. Some importations of fish meal were reported.

Bone Meal. This material has tightened up considerably in the last few weeks and supplies are scarce. Last sales were on the basis of $65 per ton, f.o.b. production points with some imported material reported arriving for the feed trade.

Hoof Meal. This material has been in heavy demand recently from the industrial users and offerings for nearby shipment are very difficult to locate. Most producers are sold ahead for 60 days with last sales made on the basis of $6 per unit of ammonia ($7.29 per unit N) f.o.b. Chicago. Additional material could be sold at this price if it were available.

Superphosphate. Because of the recent decrease in the price of phosphate rock, producers are anxious to get shipments moving against current contracts but weather conditions have not permitted any great movement so far.

Potash. Producers are disappointed in the movement so far this season and due to weather conditions buyers are holding back on ordering shipments forward on contract. If a sudden spring rush for fertilizer occurs, some producers feel they will not be able to get shipments out on time. One large producer has already announced prices for the new season and they are about in line with last season's schedule.

Philadelphia

March 20, 1958

Due very largely to unsatisfactory weather conditions, movement of raw material is still below normal. However, it is fully expected that the season will open soon and, while it will necessarily be short, it is felt it will be quite active. Meanwhile, sulfate of ammonia is in rather short supply and packing-house by-products are in stronger position.

Sulfate of Ammonia. Production of coke-oven grade has been cut, but not sufficiently to deprive domestic consumers of their requirements. However, it is stated that exports will be extremely reduced. Some of the foreign producers are reportedly also sold out.

Ammonium Nitrate. There is fair movement reported in some sections, but stocks continue to accumulate and the situation presently is more or less disappointing. However, improvement is looked for when the weather settles.

Nitrate of Soda. The market is reported dull. The supply is ample and no price changes are suggested.

Urea. Demand is said to be good and stocks are adequate.

Blood, Tankage, Bone. Market is much stronger and offerings are limited. Present quotations are the same for blood and tankage: $6 per unit of ammonia ($7.29 per unit N) New York area, and $8 per unit ($9.72 per unit N) Chicago. Bone meal is up to $65 per ton, and hoof meal $6 per unit ammonia ($7.29 per unit N).

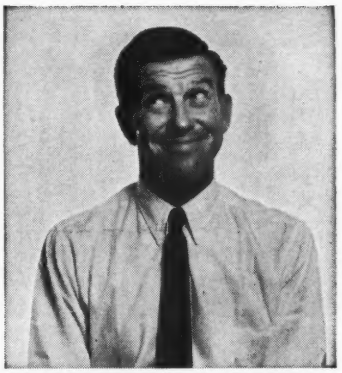
Castor Pomace. This remains nominal at $40 per ton, with large stocks on hand.

Fish Scrap. The market is stronger and prices have advanced to $126 to $129 per ton for unground scrap, with meal at $130 to $133 per ton. Demand is good but supply limited.

Phosphate Rock. Another price cut is reported. This time 5 cents per ton, due to reduction in cost of fuel oil.

Superphosphate. Demand for triple grade is fairly good, but market for normal grade is dull with demand slow and abundant supplies.

Potash. Demand continues listless and inventories are still quite large. Imports from Canada and Europe are somewhat disturbing factors.



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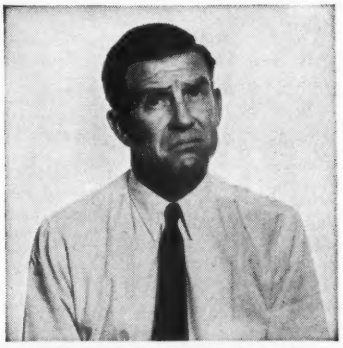

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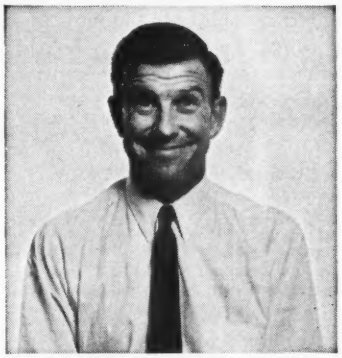

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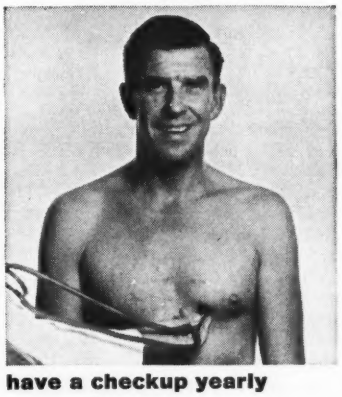

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Alphabetical List of Advertisers

Allied Chemical Corp., New York City
General Chemical Div. —
Nitrogen Division 41–44
American Agricultural Chemical Co., New York City 6
American Cyanamid Co., New York City 19, 25
American Potash & Chemical Corp., Los Angeles, Calif. 38
Armour Fertilizer Works, Atlanta, Ga. —
Ashcraft-Wilkinson Co., Atlanta, Ga. 53
Baughman Mfg. Co., Jerseyville, Ill. 49
Blue Valley Equip. Mfg. & Eng. Co., Topeka, Kans. —
Bonneville, Ltd., Salt Lake City, Utah —
Bradley & Baker, New York City 37
Bradley Pulverizer Co., Allentown, Pa. —
Chase Bag Co., Chicago, Ill. Second Cover
Clark Equipt. Co., Benton Harbor, Mich. 26
Clover Chemical Co., Pittsburgh, Pa. —
E. D. Coddington Mfg. Co., Milwaukee, Wis. —
Cole, R. D. Mfg. Co., Newnan, Ga. —
Commercial Solvents Corporation, New York City —
Davison Chemical Co., division of W. R. Grace & Co., Baltimore, Md. —
E. I. du Pont de Nemours & Co., Inc., Wilmington, Del. 9
Duval Sulphur & Potash Co., Houston, Tex. —
Emulsol Chemical Corp., Chicago, Ill. —
Exact Weight Scale Co., Columbus, Ohio —
Dave Fischbein Co., Minneapolis, Minn. —
Flexo Products Inc., Westlake, Ohio 49
Geigy Agricultural Chemicals, New York City —
Glenn Chemical Co., Chicago, Ill. 4
Grand River Chem. Div., Deere & Co., Tulsa, Okla. —
Hough, The Frank G. Co., Libertyville, Ill. Fourth Cover
Hudson Pulp & Paper Corp., New York City —
International Minerals & Chemical Corp., Chicago, Ill.
Spec. Prod., Phosphate Chemicals Div. 12, 13
Phosphate Minerals Div. 1
Potash Div. —
Jackle, Frank R., New York City 36
Johns-Manville Corp., New York City —
Johnson-March, Philadelphia, Pa. —
Joy Manufacturing Co., Pittsburgh, Pa. —
Keim, Samuel D., Philadelphia, Pa. 49
Kraft Bag Corporation, New York City —
Ludlow-Saylor Wire Cloth Co., St. Louis, Mo. —
Merck & Co., Inc., Rahway, N. J. —
Monarch Mfg. Works, Inc., Philadelphia, Pa. 52
National Lime & Stone Co., Findlay, Ohio 33
Phillips Chemical Co., Bartlesville, Okla. —
Poinsettia Beach Hotel, Ft. Lauderdale, Fla. 58
Potash Co. of America, Washington, D. C. Third Cover
Poulsen Co., Los Angeles, Calif. —
Rapids Machinery Co., Marion, Iowa —
Richfield Oil Corp., Los Angeles, Cal. —
Roberts Chemicals, Inc., Nitro, W. Va. —
Schmutz Mfg. Co., Louisville, Ky. 51
Shuey & Company, Inc., Savannah, Ga. 52
Sinclair Chemicals, Inc., Chicago, Ill. —
Sohio Chemical Co., Lima, Ohio 29
Soreno Hotel, St. Petersburg, Fla. —
Southwest Potash Co., New York City 5
Spraying Systems Co., Bellwood, Ill. —
Stedman Foundry and Machine Co., Inc., Aurora, Ind. 5
Sturtevant Mill Co., Boston, Mass. 3
Tennessee Corporation, Atlanta, Ga. 32
The Texas Company, New York City —
Texas Gulf Sulphur Co., New York City —
Thomas Alabama Kaolin Co., Baltimore, Md. 31
Tractomotive Corp., Deerfield, Ill. 35
Union Bag-Camp Paper Corp., New York City 14
U. S. Graphite Co., Saginaw, Mich. —
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla. 37
United States Potash Co., New York City 20
Velsicol Chemical Corp., Chicago, Ill. —
Vulcan Containers, Inc., Bellwood, Ill. 2
Vulcan Steel Container Co., Birmingham, Ala. —
Wis. Alumni Research Foundation, Madison, Wis. —
Woodward & Dickerson, Inc., Philadelphia, Pa. 46

Buyers' Guide

Classified Index to Advertisers in 'Farm Chemicals'

ALDRIN
Ashcraft-Wilkinson Co., Atlanta, Ga.

AMMONIA—Anhydrous and Liquor
Allied Chemical & Dye Corp., Nitrogen Div., N.Y.C.
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See Sulfate of Ammonia

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Geigy Agr. Chems., Geigy Chem. Corp., N.Y.C.
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Buyers' Guide

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Monsanto Chem. Co., St. Louis, Mo.

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American Cyanamid Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
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International Min. & Chem. Corp., Chicago, Ill.
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H. J. Baker & Bro., N. Y. C.
Bonneville, Ltd., Salt Lake City, Utah
Bradley & Baker, N. Y. C.
Duval Sulphur & Potash Co., Houston, Tex.
International Min. & Chem. Corp., Chicago, Ill.
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Finco Inc., North Aurora, Ill.
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Bradley & Baker, N. Y. C.
Jackle, Frank R., New York City
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Woodward & Dickerson, Inc., Philadelphia, Pa.

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American Cyanamid Co., New York City
Armour Fertilizer Works, Atlanta, Ga.
H. J. Baker & Bro., N. Y. C.
Bradley & Baker, N. Y. C.
Davison Chemical Co., Div. of W. R. Grace & Co., Baltimore, Md.
International Min. & Chem. Corp., Chicago, Ill.
Phillips Chemical Co., Bartlesville, Okla.
U. S. Phosphoric Products Division, Tennessee Corp., Tampa, Fla.
Woodward & Dickerson, Inc., Philadelphia, Pa.

TALC
Ashcraft-Wilkinson Co., Atlanta, Ga.

TANKAGE
American Agricultural Chemical Co., N. Y. C.
Armour Fertilizer Works, Atlanta, Ga.
Ashcraft-Wilkinson Co., Atlanta, Ga.
H. J. Baker & Bro., N. Y. C.
Bradley & Baker, N. Y. C.
International Min. & Chem. Corp., Chicago, Ill.
Jackle, Frank R., New York City
Woodward & Dickerson, Inc., Philadelphia, Pa.

TANKS—NH3 and Liquid N
Cole, R. D., Manufacturing Co., Newnan, Ga.

TOXAPHENE
Ashcraft-Wilkinson Co., Atlanta, Ga.

TRUCKS—SPREADER
Baughman Mfg. Co., Jerseyville, Ill.

UREA & UREA PRODUCTS
Allied Chemical & Dye Corp., Nitrogen Div., N.Y.C.
H. J. Baker & Bro., N. Y. C.
Bradley & Baker, N. Y. C.
E. I. duPont de Nemours & Co., Wilmington, Del.
Grand River Chem. Div., Deere & Co., Tulsa, Okla.
Sohio Chemical Co., Lima, O.

UREA-FORM
E. I. duPont de Nemours & Co., Wilmington, Del.
Nitro-Form Agricultural Chemicals, Woonsocket, R. I.

VALVES
Monarch Mfg. Works, Inc., Philadelphia, Pa.

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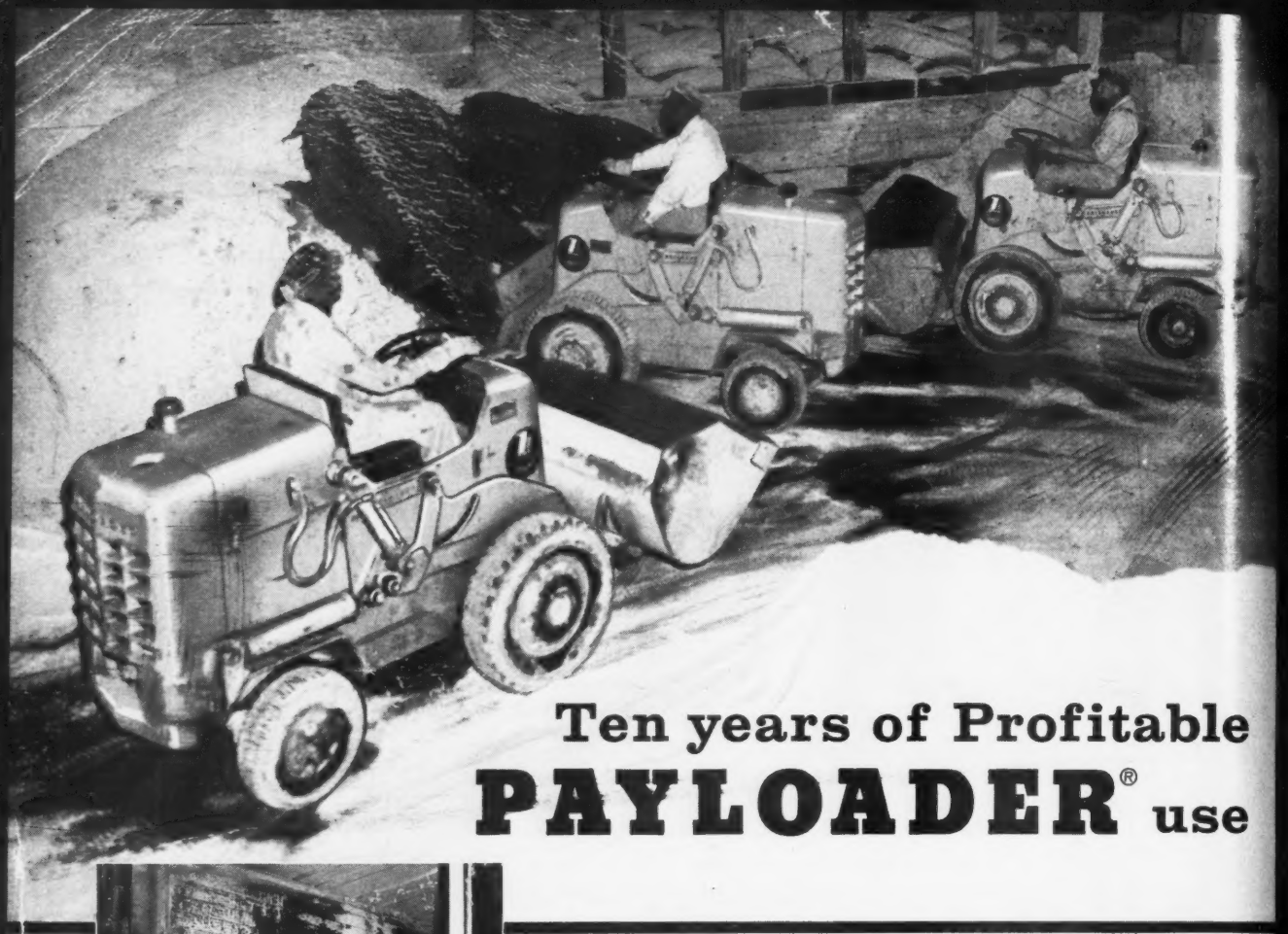

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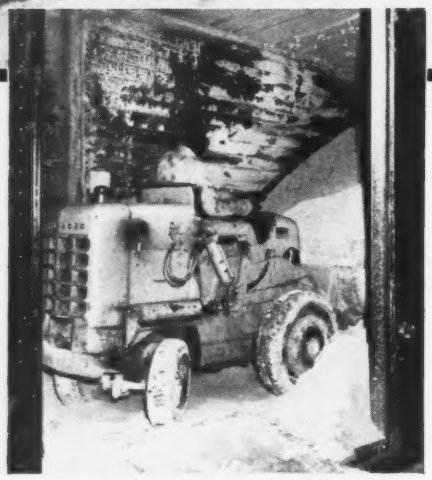

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